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Laboratory Procedures in Sanitary Milk Control*

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THE above title suggests a constructive discussion of a difficult assignment; i.e., to summarize the evidence with regard to laboratory methods for the examination of milk as represented on the one hand by the U. S. Public Health Service,[1] and on the other by the Connecticut State Department of Health.[2-4] Each complete program of control, hereinafter identified as Plan A and Plan B respectively, has its distinctive features, some of which, unless better understood, may be regarded as controversial.

When referring to fluid market milk of "high quality" or of "high sanitary quality" and when fixing minimum standards of quality for acceptable milk and cream, public health sanitary codes invariably mean, among other things, products which are free from infectious bacteria and which have, and always have had, a low bacterial content. As herein used, unless otherwise qualified, the term "milk" includes both milk and cream intended for fluid market sales. The term "quality" refers only to the bacterial condition of the sample. The term "sanitary" is used broadly to include both initial contamination with microörganisms and subsequent growth thereof.

The accomplishments should be considered, first on the basis of satisfying the minimum requirements specified under each plan, and second on the basis of the supplementary steps taken to assure conformity with the basic intent of each sanitary code. Under each plan, the administrator may require supplemental tests which are not inconsistent with the basic principles of the code and which do not lower the standards of quality or the operational procedures. Under both plans the sponsors endorse and actually encourage the application of useful quality tests which are not specifically required.

The best means to assure the safety of a supply will be discussed somewhat concisely. Because of limitations peculiar to each of the recognized procedures for estimating the bacterial content in different types of milk,[6] the more debatable features of each method will be briefly reviewed.

Although the problem for considera-

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tion is the relative effectiveness of the laboratory methods actually used to determine continuous compliance with the basic intent of the statute or code, obviously there are factors other than laboratory analyses which affect accomplishments. With the specific assignment, it is not possible to consider separately the rôle of each of these items. Because of the major rôles played by the inspection force and by the laboratory workers, it is logical to recognize these two subdivisions. Without the inspection force to investigate questionable conditions based upon laboratory determinations, the analyses would be relatively futile. Without the findings of fact, the inspection work would tend to be haphazard.

Mindful of the above considerations, it will become evident why tangible comparative evidence on achievements is practically impossible to obtain and why opinion must be substituted in part for factual evidence. Also it will become increasingly apparent that one cannot quote a few figures and percentages from reports to show with absolute fairness the actual accomplishments of control agencies. Without proper consideration of at least some of the determining factors other than laboratory analyses, this discussion would create a misconception of what constitutes sanitary milk control.

PLAN A

Under Plan A a milk ordinance and code [1] is recommended by the U. S. Public Health Service for voluntary adoption by states and communities, in order to encourage greater uniformity of milk control practices. Although subject to change as new information becomes available, Plan A represents the considered judgment of a group of technical experts familiar with various phases of the public health control of milk. To promote uniform enforcement, seminars are also arranged periodically by district Public Health Service offices to instruct both in-service and local personnel.[7]

The recommended milk control ordinance is in effect (November, 1944) throughout Nevada and Alaska, as well as in 1,001 municipalities and 150 counties and districts in 36 other states and Canada. It has been adopted as state regulations governing all milk in 15 states and pasteurized milk only in 3 other states. All graded milk must comply with Public Health Service standards in 5 states, and all Grade A milk in 4 other states. Inclusion in the complete list of subscribers to the ordinance, or to portions thereof [14] does not necessarily imply that the ordinance is being satisfactorily enforced, and lack of enforcement does not bar inclusion. Enforcement is not a responsibility of the Public Health Service.

Compliance lists are published periodically, except during the war emergency, of communities which have adopted the ordinance and code and in which both the pasteurized milk and the raw milk compliance ratings are 90 per cent or more.[8] Inclusion in this list means that the state health department, upon request for inspection by the local community, has reported that the milk ordinance in effect in that community is the Public Health Service milk ordinance without downward revisions, or changes in grade names, or significant changes in the form of the ordinance. Upward modifications are permitted, but not recommended except as necessary to avoid conflict with the state laws. Regrading and degrading schemes are proposed to reward or to penalize respectively individual producers and dealers, as the case may require. Prior to determining compliance ratings, ratings are also assigned to enforcement methods in order to make certain that determinations are reasonably uniform.[9, 10]

The degree of enforcement according

to the latest published record,[8] where all Grade A milk, both raw and pasteurized, had a compliance rating of 90 per cent or more, lists 21 communities where all of the milk was pasteurized, 124 where varying amounts of raw and pasteurized were sold, and 19 where all of the milk sold was raw.

The enforcement unit and the testing laboratory are probably in the same administrative subdivision of the governmental agencies in most cases. Where more than one laboratory is responsible to any one agency, it is probable that annual inspection of such laboratories to determine conformity to standard practices is not mandatory prior to approval.[4] Furthermore, the uniformity of operations would be appreciably less if all of the laboratories alleged to be using A.P.H.A. methods were compared.[11] In connection with its responsibilities for the quality of milk used on interstate carriers, the Public Health Service has in recent years assisted many state health departments in establishing uniform supervision and approval of local laboratories analyzing supplies used on common carriers. Extension of these activities should go far to achieve a high degree of uniformity in laboratory operations and to make analyses in the many communities operating under Plan A comparable to that described under Plan B.[12]

Because the Public Health Service ordinance is placed in the hands of so many administrators, inspectors, and milk plant operators, some of whom undoubtedly are less well informed than others, more detailed directions appropriately have been published. *Bulletin 220* supplies this need with 44 pages of directions for guidance when inspecting the premises of the milk producer and the milk producer-distributor and 58 pages when inspecting the operations and equipment in the pasteurizing plant.[1]

During each grading period, which shall not exceed 6 months, each agency in order to conform under Plan A, (1) must inspect all dairy farms and all milk plants once, and (2) must examine four samples of milk and cream from each farm and from each milk plant.[1]

Various quality grades are established under Plan A for raw milk, depending upon the alternate use of standards expressed in terms of the Standard Plate Count, the Clump Microscopic Count, the Individual Microscopic Count, and the Methylene-Blue Reduction Time. The agar plate method is the only procedure authorized for use on pasteurized products. Determinations of conformance are based upon the average of four successive counts on samples from the same source taken on different days. In case determinations are made by one of the counting methods, the logarithmic average is employed.

Although the value of the phosphatase test is mentioned in a footnote [1] and also in one of the amendments (Dec. 3, 1942), its use is not required on pasteurized products. The coliform test is not referred to. The application of sterility tests [6] to determine the degree of sterility of the surfaces of single-service containers and container caps and covers and of milk bottles and cans is given due consideration.

When infractions of the ordinance are discovered, a farm or a milk plant may be degraded based either upon violations of operational practices or the failure to provide equipment and facilities on the premises as determined at the time of inspection or upon violations as determined by laboratory tests on the milk as offered for sale.[1] When the violator has shown his ability to correct the infraction, then upon application for regrading the supply may be regraded. Despite guidance provided by repeated seminars, provisions for regrading and degrading milk supplies

are inevitably subject to variations in discriminatory action locally. Where judiciously enforced, undoubtedly the results will be a reasonably equitable adjustment, according to the efforts made by the producer or by the retailer. When, and if, it can be demonstrated that milk from a certain source will satisfy the quality standards as determined by suitable laboratory tests, it is distinctively debatable whether all of the mandatory facilities, equipment, and operations itemized for dairy farms and for milk plants are positively essential.[13] Unless wisely administered, too much regimentation may occur under any plan.

Because of the wide adoption of the Public Health Service ordinance,[14] it has been impossible to examine the records obtained in each place individually or otherwise. No doubt, in some places the enforcement is distinctively above criticism because the administrator has supplemented his mandatory determinations with additional determinations which assure both greater safety and more uniform compliance.[15] In contrast, probably there are many who have not done so.[8, 14]

PLAN B

Plan B [2, 3, 4] represents the considered judgment of qualified control officials in Connecticut, is mandatory only in its minimum statutory requirements, and is administered by a single enforcement officer for all fluid market milk and cream consumed in the state.

The jurisdictional area is the State of Connecticut with the adjacent milk shed. The area where the milk is consumed is confined to 4,965 square miles, the population (1940 census) was 1,709,242, and the greatest distance from a producer within the state to the State Laboratory is about 75 airline miles. There are about 5,000 farms within the state that produce milk for sale. The milk shed normally includes adjacent areas in New York and Vermont.

The enforcement unit and the testing laboratory operate under two separate administrative subdivisions of the state government. The Laboratories of the State Department of Health assume the responsibility for the official examinations of all samples of milk and cream submitted by the Dairy and Food Commissioner. To aid in the work, the State Health Laboratory, after inspection and approval of facilities in other laboratories in the state to make certain specified determinations, examinations, and tests relative to the sanitary control of milk, issues certificates to certain qualifying laboratories.[4] In 1946 certificates were issued to seven municipal laboratories and to twelve others. Annual mandatory inspection before issuing new approvals assures a high degree of uniformity among laboratory operations.

Inspections of farms and of milk plants are made under the direction of the Dairy and Food Commissioner. No minimum frequency of official inspections or of official sampling is required by statute.

Various quality grades are designated for both raw and pasteurized milk depending upon a specified average number of bacterial colonies per ml. as determined by analyses made by the agar plate method.[3] The average means the logarithmic average of the last three consecutive samples taken on separate days. In some instances, the period of sampling is limited to an interval not exceeding 30 days and the determinations to be averaged, although they must be on "at least three separate samples," are required to be neither on samples taken on separate days nor on samples taken consecutively.[3]

No minimum frequency of laboratory examination of raw milk to be pasteurized is required by statute but the Dairy and Food Commissioner attempts

to make examinations quarterly. About 70 per cent of the raw bulk milk is sampled and examined quarterly by the buyers and about 30 per cent is sampled and examined quarterly in the State Health Laboratories at the direction of the Dairy and Food Commissioner.[16]

The laboratory examines essentially all samples of milk and cream by the direct microscopic method. The agar plate method is used only in special cases, such as on certified milk and on samples, the "bacterial counts" on which are to be reported, together with other determinations, to officials in the U. S. Army. All allegedly pasteurized milk samples are routinely examined by the phosphatase test and by the coliform test. Sterility tests on equipment are made only as circumstances indicate the need thereof.

When infractions of sanitary standards are found, the common procedure is to send a warning letter to the individual responsible for the sale of the milk. After making subsequent tests or examinations, if infractions continue to exist, the individual is asked to appear at a hearing. After making a third test or examination to determine whether or not infractions still exist and such infractions continue, then the sale of the milk from the farm or from the milk plant responsible for the condition is prohibited. Such prohibitions may be temporary or permanent, depending upon the steps taken by the operator to correct the unsatisfactory conditions.

Under Plan B, the selection of a qualified enforcement official who has had both training and experience in sanitary milk control problems is reasonably assured. Conferences are arranged periodically with inspectors so as to establish as high a degree of uniformity of operations as possible.

Despite the application of special laboratory tests to all samples of import cream, there is some reason to believe that an abnormally high percentage of both raw and pasteurized cream, as judged by the records on samples examined, exceeds the standards. A record on samples of raw milk to be pasteurized shows a relatively low percentage of milk exceeding the standards. Based on samples examined, the percentage of retailed pasteurized milks which exceeded the standard was about twice as great as the percentage of violations among the samples of raw milks to be pasteurized. Obviously such percentages are subject to distortions caused by repeated examinations of samples from sources where violations have occurred or are more apt to occur.[16] Among other reasons for these percentages being high are, (1) the use of the direct microscopic method which makes possible the discovery of high count samples that ordinarily would escape detection by the agar plate method, and (2) the wartime inability to make as frequent inspections of premises as are needed to assure reasonable compliance.

GENERAL APPLICATIONS AND LIMITATIONS OF METHODS

None of the routine laboratory procedures for estimating the number of bacteria in milk[5, 6] will determine whether or not infectious bacteria are present. The best assurance of freedom from infectious bacteria is that provided by proper pasteurization of the milk.[17–19] The best assurance of pasteurization is that demonstrated by a satisfactory phosphatase test on the bottled pasteurized milk.[20–23] The best assurance of freedom from recontamination in freshly bottled milk after pasteurization is a satisfactory coliform test in 1.0 ml. portions of the bottled product.[24–27] In the case of raw milk to be consumed raw, the assurance is much less satisfactory[28–31] and can only be achieved in part by the careful

handling by healthy individuals of milk from cows that are not infected with tuberculosis,[32, 33] brucellosis,[34] etc., not suffering from pathogenic udder infections,[35, 36] streptococcal, staphylococcal, etc., and in which mastitis infections[37] are reduced to the practical minimum.

The degree of careless handling of either raw or pasteurized milk is generally reflected by the magnitude of the count. Furthermore, when milk is determined to be the sole cause of the illness among consumers, it is more common to find products (with a high bacterial content) which have been subjected to careless methods of production and handling responsible for the condition than products with a low bacterial content.[38]

In addition to assurances of satisfactory facilities, equipment and operations at the farms and in the plants, the administrator wants to know whether or not the milk conforms with the prescribed standards as determined by laboratory examination. By the selection of methods,[5, 6] the laboratory can determine objectively in raw milk the "bacterial count" and, when a high count is found, roughly the extent of and whether or not udder infection, utensil contamination, or poor cooling are among the causes thereof. By the selection of methods,[5, 6] the laboratory can determine objectively in pasteurized milk whether or not it has been pasteurized and the "bacterial count" therein and, when a high count is found, roughly the extent of thermoduric, thermophilic, and psychrophilic contamination, and the degree of poor cooling, extended storage, or recontamination from equipment after pasteurization.

When samples fail to conform and the inspector and the laboratory are near the scene of operations, the objectionable condition(s) usually can be corrected more quickly. In some cases, determinations can be made by the inspector on the receiving platform so as to prevent the acceptance of unsatisfactory milk.[39, 40] Where determinations are to be made in a distant laboratory, the need for circumstantial information concerning the sample increases. Without this information, the laboratory cannot always be expected to interpret correctly the cause(s) for the objectionable conditions. Promptness in supplying correctional information so that inspections may be guided properly and without delay is essential for an effective enforcement program. In most cases, however, the laboratory director can guide the inspection force in selecting the samples so that the determinations will provide the most useful information.

RECONCILING THE CHOICE OF METHODS WITH OBJECTIVES

Because the choice of methods for bacterial estimation will depend in part upon the destined use of the product, the advantages and limitations of each of the control measures will be considered separately for, (1) raw milk to be pasteurized, (2) pasteurized milk, and (3) raw milk to be consumed raw. Since determinations are influenced by limitations peculiar to each method, implications that one method is indisputably more accurate than another are unsound.[5, 6, 41–47] Because of these limitations, it is all the more important to consider the results of tests, as a means to classify the milk into 2, 3, or 4 groups or grades.[13, 43] The principle of grading is distinctively applicable to supplies of raw bulk milk and may be applied with discretion to retail supplies. Where a sample falls in a lower group or grade by any one method than it does by another, it is probable that the method which places it in the better class has failed to respond to some peculiar objectionable condition in the sample which the other method will de-

tect. Mindful of these limitations, the result by each of the methods should be regarded solely as a relative "estimate" or, perhaps more appropriately, as an index figure of the true bacterial content of the sample.[5, 6, 48]

When the colony count is determined by the agar plate method or when actual numerical counts of clumps or of individual bacteria are made by the direct microscopic method, allegorically the principle is like measuring a mile (the spread between very low count milk and very high count milk) with a relatively short measuring stick. By so doing, proper interpretations are often slighted by unnecessary attention to details both when approaching and when departing from various signposts. In contrast with such forms of measurement, the reduction type methods[45, 46] and a common application of the microscopic method,[49] permits the rapid grading of samples into 2, 3, or 4 groups, thereby making quality grades possible on about five times as many milks per unit of time as can be made by the counting methods. Irrespective of inherent limitations of the method and of the character of the milk to be examined, some regard the microscopic and the reduction type methods as distinctively less reliable procedures than the agar plate method for marking off subdivisions of the allegorical mile. By using certain "Screening Test" modifications,[6] the 5 to 1 ratio may be increased. Having obtained a quality grading first, then it is possible to spend a part of the time which has been saved directing operations to correct conditions where high counts are found. As a public health measure it is doubtful that the reporting of numerical "estimates" is strictly necessary. Where the "three out of four" method[6] to determine conformance is employed, the need for numerical "estimates" is even more remote, except to make proper borderline distinctions and to provide definite values where penalty measures may be required.

Regardless of the method used to determine compliance, the classes could be selected so as to indicate to the producer or dealer, when the determinations are reported to him, (1) whether he generally has a wide margin of safety, (2) whether he is just within the "Acceptable" limit ("Acceptable," as determined by local standards), (3) whether he is a marginal violator, or (4) whether his milk is grossly contaminated.[6]

RAW MILK TO BE PASTEURIZED

The procedure which permits both rapid grading and the recognition objectively of the most probable cause(s) for poor quality milk, in case high counts are observed, is the direct microscopic method.[6, 50] The distinct advantage of this technic is (1) its adaptability both to grading the milk promptly and, when required, to counting the actual clumps of, or the individual, bacterial cells, and (2) the opportunity it affords simultaneously in case of high counts for the partial recognition in the milk film of bacterial types and cell arrangements which are characteristically associated with (1) faulty cooling, (2) utensil contamination, (3) udder infection, or (4) some combination of two or more of these items.[51–53] Determinations may be made either in the field or in the laboratory. Although a highly skilled operator is able to draw closer distinctions about conditions associated with udder infections,[54] a reasonably careful and conservative technician may be relied upon to distinguish the three conditions referred to above. Because of varying numbers of bacteria per clump, however, counts of clumps do not represent a *constant proportion* of the total bacterial contamination among different samples. Counts of clumps furnish a relative index of the total

bacterial content among samples.

The chief disadvantage of the microscopic technic is the fatiguing eye-strain involved [6] chiefly where *actual counts* of clumps or of bacteria are made and reported. This disadvantage is enhanced by the bacteria-per-field distribution variable which potentially increases in magnitude as the bacterial content decreases. Although this variable appreciably influences replicability among "estimates," it can be controlled in part by the number of fields examined. Ordinarily this variable need not be alarming because, strictly as a public health measure, actual estimates are required only in marginal cases to assure proper grade distinctions, or in special cases for averaging counts, or in case records may be used for court testimony. Stained milk preparations may be preserved indefinitely for purposes of reference, as demonstrations in court, check counting by other analysts, etc. Mindful that only 0.01 ml. of milk is spread over a 1 sq. cm. area and that the amount of milk solids recommended for routine examination, when grading,[6] varies from about 0.000002 to 0.00001 gm., it is amazing that different operators can duplicate results by the direct microscopic method as closely as they do. Failure to use the method in the most skillful manner possible is often credited as a limitation of the method.

Where tradition is a major influence, the agar plate method will be used to determine the bacterial condition in milks intended for pasteurization. The plate method is distinctively a laboratory procedure. About thirty years ago, its use was sanctified by a vote of confidence [55] as being less subject to errors than the direct microscopic method when used as an index of total bacterial contamination. Although still masquerading occasionally as a "total count of the bacteria present," [5, 6] determinations by the agar plate method have served almost since quality control began as an unprecedented guide for health departments to establish and to maintain quality grades of milk. Despite its limitations, the method has served well as a relative index of bacterial densities. The amount of milk deposited per plate varies from 0.0001 ml. (sometimes 0.00001 ml.) to 0.1 ml. Determinations are available only after the plates have been incubated for 48 hours, which in most cases is after the milk has been consumed. Only clumps containing viable bacteria will form colonies on the plate, and even these bacteria must be of a type which will form detectable colonies on the specially selected agar [56–58] when incubated at an arbitrarily chosen temperature.[59, 60] A count of the colonies, even if each clump formed a colony, would not represent a *constant proportion* [5, 6] of the total bacterial contamination among different samples of milk. Since the plate method fails to permit recognition objectively of the most probable cause(s) for high counts, when high count samples are recorded, the microscopic method may be used most satisfactorily for this purpose.

On low count milk the plate method can often be used with greater satisfaction than the other methods because the disadvantages of the microscopic and reduction type methods exceed the limitations of the former. As the counts continue to decrease, the corresponding advantages of the agar plate method increase to the point where its use is preferred to that of the other procedures. This point is often debated in case of the direct microscopic method. Obviously it depends almost exclusively upon the skill and willingness of the operator to use the microscopic procedure as it can be used as a counting technic.[61, 62] In proven low count milk the bacteria-per-clump variable is usually low, thereby increasing potentially the replicability among

"estimates" by the plate method, while the bacteria-per-field distribution variable increases as the counts become lower, thereby decreasing potentially, unless additional fields are examined, the replicability among "estimates" by the microscopic method. On first consideration, it appears desirable to use the method which provides minimum variance among replicate observations. If minimum variance alone were a true index of the reliability of methods to determine bacterial density, the reduction type methods would be used exclusively.

The reduction type methods offer the simplest form of grading tests recognized [5, 6] and are particularly adaptable where funds are limited. More samples can be graded per unit of time by the reduction methods than can be classified by any of the other procedures. Although the application is distinctively limited to classifying samples as to grade, both the methylene-blue reduction method [63] and the resazurin reduction method [64, 65] are applicable within reason to all quality grades of raw milk.

The amount of milk subjected to the test is 10 ml., which varies from 100 to 1,000,000 times the volume actually examined or tested when other recognized methods are used. Because the decolorization of the dye is influenced by the growth of each individual cell in so far as it is able to consume oxygen, determinations by the reduction methods may be expected to parallel closely the actual degree of contamination.[6] Since each of the reduction type methods fails to permit recognition objectively of the most probable cause(s) for high counts, when short reduction time intervals are recorded, the microscopic technic may be used most satisfactorily for this purpose.

Because coliform bacteria may be derived from such a variety of sources, because their presence in milk is not necessarily indicative of fecal contamination, and because their rate of growth is roughly proportional to the rate of growth of the majority of the bacteria present, tests to determine their presence in raw milk intended for pasteurization and thereby to supplement determinations made by the counting, grading, and reduction type methods, are of little or no additional significance.[66, 67] A special interpretation is applied to the presence of coliform types of certified raw milk.

PASTEURIZED MILK

In addition to the common advantages and disadvantages outlined for the microscopic method under applications to raw milk, this method permits the detection of abnormal conditions in pasteurized products which otherwise would escape detection.[68–72] Dead and partially plasmolyzed bacterial cells in the films may retain their staining properties in varying degrees in freshly pasteurized milk, but such milk, when examined more than 6 hours after pasteurization, ordinarily will disclose so few bacteria which have been killed during the heating process that any such organisms, if present, will constitute an insignificant portion of the total number of stainable bacteria present. Some [72] have called attention to the misconception [55] regarding the presence of the so-called dead bacteria. Although others [73] have directed attention to the presence of the so-called "thermophilous bacteria" in pasteurized milk, apparently this idea was forgotten when methods for determining conformance to standards were considered.[55] There is good reason now to believe that many of the stainable, assumed-to-be-dead, bacteria in the films were living bacteria which failed to grow because the agar and incubation temperature would not permit their growth.[69]

Some who find pasteurized milk sup-

plies to be satisfactory by the direct microscopic method may interpret from such determinations that all of the raw milk before pasteurization necessarily must have been satisfactory also. Obviously this is a false assumption and the same would be equally true if the results of tests by the agar plate method or by the reduction type methods had been satisfactory. Unless records are obtained to show that the raw milk to be processed conforms to regulations, no pasteurized milk supply can be regarded as adequately controlled.

In general, the common advantages and disadvantages outlined for the agar plate method under application to raw milk, apply also to pasteurized products. Despite its limitations, as referred to previously under raw milk to be pasteurized, the method can often be used on proven very low count samples with greater satisfaction than the other methods because the disadvantages of the microscopic and reduction type methods often exceed the limitations of the former. In addition to determining the cause(s) of high counts by means of "line tests" and by the direct microscopic method, additional plates, when microscopic observations indicate the need thereof, should be incubated at appropriate temperatures to permit the growth of thermophilic [70, 71] and psychrophilic species [74] and of bacteria that survive pasteurization.[69, 72]

Although a modified application of the methylene-blue reduction methods, promulgated by the Ministry of Health, March 1, 1946, is used in Great Britain, this application to pasteurized products does not seem feasible in America. Thus far, the resazurin reduction method has not been found satisfactory on pasteurized products.

Unless phosphatase tests are made at regular intervals and, when a positive determination is discovered, additional samples from the same source tested until it is assured that results may reasonably be expected to continue to be satisfactory, no pasteurized milk supply is adequately protected.[20-23]

Where coliform tests on freshly bottled pasteurized milk show positive determinations in 1.0 ml. quantities, no pasteurized milk can be regarded as satisfactory.[24-26] Since coliform species are invariably killed during the heat treatment, their presence in the freshly bottled product constitutes an unusually delicate test for recontamination, usually from the equipment somewhere between the pasteurizing and bottling operations. As the interval between bottling and the time of testing increases, it becomes increasingly difficult to determine objectively, when positive tests are discovered, whether the cause thereof was initial coliform contamination or subsequent growth of such contamination.

Where questionable procedures are used to sanitize the dairy utensils or the milk plant equipment, sterility tests may be used advantageously to disclose the exact piece of equipment which has been subjected to faulty sterilization.[5, 6]

RAW MILK TO BE CONSUMED RAW

The applications of the several quality test methods, as outlined under raw milk to be pasteurized, are equally applicable to raw milk to be consumed in the raw state. Because such milk is not protected by any heat treatment, it is essential that more frequent inspections of the producer's premises and of the equipment, personnel, and methods at the milk plant be made.[28-37] Furthermore, the milk should be produced by animals which are free from bovine tuberculosis, brucellosis, and other diseased conditions, and come from udders that are free from infection.

DISCUSSION OF APPLICATIONS

Without an exhaustive study of

records and without at some time taking an active part in the operations under each plan, it is impossible to summarize completely the importance of all of the operations and achievements. However, certain items are more outstanding than others, among which are the following:

1. Enforcement of the Public Health Service ordinance is a responsibility of the subscribing authorities. Some jurisdictions not listed in the 90 per cent conformance group undoubtedly are providing a higher assurance of safety than some that are listed. Some jurisdictions that are on the complete list obviously are not enforcing the essential provisions of the ordinance. Other jurisdictions may be enforcing the ordinance but have not solicited certification thereof. Undoubtedly many jurisdictions in the Americas, exclusive of those subscribing to the Public Health Service ordinance, have identical objectives and have equally as effective enforcement as those in the 90 per cent or higher conformance rating group. There are others where the reverse is true. Without enforcement even the best control plan becomes worthless. Without periodic ratings of enforcement methods, neither uniform enforcement nor compliance with standards can be assured among different jurisdictions.

2. *Bulletin 220* of the Public Health Service commendably provides a uniform basic guide for less well informed officials on many items essential in sanitary milk control. Supplemented by seminars provided by district Public Health Service offices to promote uniform enforcement by both in-service and local personnel, Plan A makes possible as high a degree of uniform enforcement as is reasonably obtainable under a volunteer adoption system. The Public Health Service, except as needed to provide milk for interstate carriers, has essentially no persuasive control in the various jurisdictions subscribing to the ordinance except that engendered by publication of the results of accomplishments, i.e., by listing communities in which all Grade A milk sold therein has a 90 per cent or higher conformance rating with the standards prescribed. Enforcement methods are rated prior to determining compliance ratings. A listing periodically of those communities, at least by appropriate groups, according to the degree of compliance would be expected either to provide more uniform local enforcement or to retard adoption in communities where enforcement of the ordinance is apt to be less effective.

3. Several jurisdictions have supplemented the basic requirements in the Public Health Service ordinance by requiring the routine use of the phosphatase and coliform tests on all pasteurized milk and cream samples and thereby have provided a greater assurance of safety.

4. By stipulating that the agar plate method is the only one recognized for determining the conformance of pasteurized milk with the standards, the ordinance wholly ignores the possible detection of an appreciable number of samples which may contain large numbers of bacteria that fail to produce detectable colonies on the plates.

5. The requirement in Plan A that four samples of producer's milk shall be examined by an official agency during each 6 month period places a heavy burden upon finances and personnel in the respective administrations, especially those with large milk sheds. Because of the essential need for repeat samplings and repeat inspections in cases where samples fail to comply, the cost of control to provide 90 per cent compliance ratings may become almost prohibitive. The cost to public agencies can be reduced by placing a part of the routine responsibility on the licensed purchasing agency for inspecting producer's premises and for ex-

amining samples and maintaining each supply in an acceptable form.

6. Under plan B, essentially all bacterial estimates to determine compliance are reported in terms of clump microscopic counts. Since the original law as well as the rules and regulations adopted by the Milk Regulation Board provide minimum standards for quality in terms of "standard plate count bacterial colonies," and since there is no record that either body, but more especially the legislature, has modified its original intent of the precise manner in which compliance shall be determined, it is doubtful that conformance is determined legally in the State of Connecticut unless tests are made by a method which provides for expressing the results directly in terms of "standard plate count bacterial colonies." There is no record that the legislature has reconsidered or that it has authorized the use of substitute standards for the equivalence in quality in terms of results by another method.

7. The manner of reporting by the Laboratory of the State Department of Health in terms of clump microscopic counts was agreed upon as acceptable to the Dairy and Food Commissioner. Probably results of tests by the two methods have been compared to show the fairness of the clump microscopic count standard as an interchangeable measure of quality with the legislative standard for proven low count pasteurized milk. The standard clump microscopic count in terms of 200,000 per ml. for retail Grade A raw milk probably is a liberal interpretation for the equivalence in quality of the legal agar plate count standard. The use of the microscopic method is not criticised but the specific authority to ignore the statutory provisions appears to be lacking.

8. Records would indicate a distinct need for more frequent routine sampling. This applies both to producer's milk and even more particularly to the retailed milk and cream. The repeated finding of more than 10 per cent of the samples which fail to comply indicates that the cause for the high count, perhaps influenced by relapsing tendencies in the plant between samplings, has not been eliminated.

9. Some methods of examination reveal more promptly and more completely than other methods the information needed, e.g., whether or not the bacterial content is excessive and, in case of a high count, the most probable cause(s) thereof. Despite the value of prompt determinations, the need for a reliable index figure of the total bacterial population cannot be ignored. The use of methods which delay reports and which lack completeness is not always consistent with the basic intent of regulations. When it is established that more useful methods can be judiciously employed to speed up determinations, to assure a higher degree of safety, and to indicate more consistently the total bacterial population in the milk, it is distinctively a responsibility of the administration to provide for amending such inflexible portions of the regulations as may obstruct the accomplishment of the basic intent of the code.

10. Where a quality standard for a product is fixed in terms of results by two or more methods, the official standards should be interchangeable in so far as it is possible to make them so.

11. Since the values obtained by any of the official methods do not represent an actual count of the bacteria present, or even a constant proportion of the bacterial contamination in the samples, the results of determinations may be looked upon essentially as relative index figures of the true bacterial content of the sample. For this reason the figures so obtained can more logically be grouped into grades or classes indicating major differences in

sanitary quality instead of being regarded with mathematical precision. In the absence of precise values, instead of averaging the determinations, the use of the "3 out of 4" method,[6] in order to ascertain compliance, is a simple and practical substitute for averages. As a public health measure, the need for reporting actual numerical "estimates" of the bacteria may be confined chiefly to borderline cases to assure proper grade assignments and to the preparation of records where court testimony may be required.

12. Where determinations in the form of "estimates" are needed, frequently those made by the plate method, especially among proven low count samples, vary less among replicate values than those commonly obtained by the microscopic method. Where a sufficient number of fields are examined, this variance among replicates, even on proven low count samples, may be reduced, if needed, so that it does not exceed that obtained by the plate method. When samples which supposedly have a low count as determined by the plate method are examined microscopically and are proved to contain appreciably more bacteria than the "Standard Plate Count" discloses, the importance of replicability among plate counts as a measure of reliability to determine conformance is distinctively reduced. Furthermore, a high variance among replicates has never been shown to jeopardize public health. Despite the relapsing tendency to regard replicability among counts as synonymous with accuracy, the agar plate method will continue to be a useful procedure for indicating the degree of contamination in proven low count milk.

CONCLUSIONS

Under either the U. S. Public Health Service Ordinance and Code (Plan A) or under the Connecticut State Department of Health Program (Plan B), the fundamental objectives of maintaining the highest possible assurance of safety and continuous conformance to the standards for low count milk have not been as fully achieved as might be expected.

Plan A would be improved by:

1. Requiring the routine testing of all samples of allegedly pasteurized milk using the phosphatase test and the coliform test.
2. Requiring a microscopic examination of all raw samples which fail to comply, especially when field inspectional methods fail to disclose the cause for high counts or short reduction times.
3. Requiring routinely a microscopic examination of all pasteurized samples to determine whether or not high count samples escape detection by the plate method.
4. Permitting the use, where determinations have been checked periodically and found satisfactory, of routine plant reports on inspections and analyses of samples by licensed purchasing agencies in lieu of official inspections and analyses.

Plan B would be improved by:

1. Securing proper legislation fixing, or allowing the Dairy and Food Commissioner to fix by official order, standards for bacterial density in terms of results by methods which are to be used officially for the determination of compliance with the statute.
2. Providing for more frequent routine inspections and examinations of samples, with prompt repeat inspections and repeat examinations of samples in cases of non-compliance until continuous conformance can be reasonably assured.

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AMERICAN PUBLIC HEALTH ASSOCIATION

Training Public Health Personnel from Other Countries in the United States

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EXPERIENCES during the war have focussed attention on the value of trained public health personnel. Never in history has public health asserted a more significant rôle in war. This has been evident especially in the control of typhus and sanitary operations in Africa and Italy and in the control of tropical diseases in the Pacific and Latin American areas. It has been evidenced too in the excellent standards of public health maintained in our own war congested cities and industrial areas. For this splendid record we are indebted to a nucleus of well trained workers who usually proceeded under considerable difficulty and who, in many instances, were obliged to train personnel in other countries to carry on the work.

In the post-war period there is a demand throughout the world for trained public health personnel. The need is both obvious and urgent. Natural barriers to communication have been unalterably lowered and this alone is creating unprecedented problems in the transmission of endemic diseases. The usual controls of communicable disease have been thrown out of gear by massive shifts of population, by problems of displaced peoples, and by concomitant lowering of sanitary standards. Inadequate nutrition and epidemic disease are symbiotic. Sanitary safeguards in many countries have been disrupted by bombing and by breaking down of normal maintenance. Worst of all, the supply of trained public health workers in many countries has been cut off at the source by a deterioration of training facilities. To be sure, the medical corps of armies of occupation and the medical division of the UNNRA are attempting to meet these problems by the assignment of United States trained public health personnel and by efforts to train nationals. The Institute of Inter-American Affairs is doing a similar job in the Latin American countries. While these agencies are accomplishing much, often against bitter odds, their work is largely temporary. Their efforts are not always accepted whole-heartedly by other governments because the work is done by "foreign" personnel and methods. The work must be continued by national trained personnel if results are to be enduring.

Public health protection in many countries can be sustained only by the rapid reëstablishment of national training facilities and by the training of personnel in other countries where facilities have not been too much disturbed by war. For some time to come, the United States will offer the greatest hope of providing this training for public health workers from other countries. Fortunately, our schools of public health and other training resources have survived the war and have even made progress during this period. The

progress was due partly, in fact, to the acceptance of students from Latin America. The experience in handling the men from other American republics has been valuable in teaching us how to deal with the problems of students from other parts of the world.

Considerable responsibility is attached to such a program. Students from abroad cannot be managed as we would handle our own students. Yet the success of such a program will mean much to the future of public health throughout the world, will raise the prestige of United States public health and will do much to cultivate international coöperation in this field. Since most of the problems involved in the training of Latin American students under the Institute training program are basic to the training of public health workers from other parts of the world, the authors believe that a description of the training program of the Institute of Inter-American Affairs and of the problems encountered will be helpful as a guide to the management of workers from other countries who come to the United States for training.

TRAINING PROGRAM OF THE INSTITUTE OF INTER-AMERICAN AFFAIRS

The training program of the Institute developed from coöperative agreements signed by the United States and other republics of this hemisphere as an outgrowth of the Good Neighbor policy. It was included in the activities of the Office of the Coordinator of Inter-American Affairs which was created as a war emergency measure to solidify the economic interests of the western hemisphere. Nelson Rockefeller, the Coordinator, was asked to give all possible aid to the protection and improvement of public health in areas surrounding our military bases established in the other American republics for the common defense of the hemisphere. He was also asked to coöperate in developing public health work in areas within these countries where vital materials were available to replace those lost when Japan took possession of the South Pacific Islands.

This twofold health and sanitation and food supply program was placed in charge of Major General George C. Dunham who was assigned to the Coordinator's Office by the Surgeon General of the United States Army. Agreements were drafted by Dr. Dunham and were made with eighteen of these republics, whereby mutually supported public health programs were to be carried out under jointly appropriated funds. In 1945 Dr. Dunham was succeeded by Col. Harold B. Gotaas as President of the Institute of Inter-American Affairs.

During the first half of the agreed upon five year program the funds contributed by the United States exceeded those provided by the Latin American countries. For the latter half, however, the position is already reversed. It is expected that by the end of the period these countries will be carrying out these programs from their own funds. Public health technicians from the United States were sent to the various countries as administrators and specialists to help develop this program. The work was to be concerned primarily with the improvement of sanitation facilities, construction and operation of health centers, and the control of malaria and other endemic diseases in strategic areas. The improvement of methods of agriculture was also stressed.

It soon became apparent that there would be no continuity after these U.S.A. technicians were withdrawn, unless nationals could be trained to take over the management of projects. Consequently, efforts were made to provide in-service training, to establish local training centers, and to train some of each country's most promising public health and agricultural workers in the United States. Funds were provided by Con-

gress for the specific purpose of training these men in the United States. The training program will continue until the coöperative agreements expire in 1948. The first trainees in public health, sanitary engineering, medical sciences, nursing, and agriculture began to arrive in June, 1943. Since that time 620 have completed or are now pursuing their studies in the United States. It is estimated that 715 study and travel grants under IIAA will have been completed when the agreements expire.

Applications are submitted by Institute representatives in the various countries, the Training Division of IIAA is responsible for selection, professional placement, State Department clearance, travel arrangements, stipends and other payments, and personal supervision.

Activities of the Training Division are not confined to the handling of trainees in public health specialties. For Chile, where all medical and public health work is under governmental control, the division formerly arranged grants in clinical medicine with parallel observations of public health activities. The Brazilian government set aside special funds for grants in medical specialties, all of which are handled by the division. In Paraguay and certain Central American countries it seemed desirable to provide grants in the basic medical sciences in order to promote medical education as an indirect benefit to public health. A few hospital administrators were accepted from countries where hospital care is controlled by the ministry of health. A few nursing administrators and educators were accepted for similar reasons. A group of nursing sisters and another group of social service workers were provided with special programs in United States hospitals and schools of social work. A special program was developed for a group of sixteen health educators from as many countries at the new school of public health at the University of California.

The Training Division has also handled 88 nutritionists and agriculturists as a service to the Food Supply Division of the Institute of Inter-American Affairs. These people came from countries where coöperative agreements in the agricultural field similar to the health and sanitation agreements had been set up by the Institute. The Department of Agriculture assisted in arranging study programs for this group while the Training Division handled travel arrangements and personal supervision.

The majority of grants provide for study in the various specialties of public health. The nature of study varies according to the specific needs of the country and the type of work being conducted there under coöperative agreement. Most of the trainees are assigned to schools of public health where they follow the formal pattern leading toward degrees of public health or sanitary engineering. The next largest group comes for practical instruction in public health laboratories, health centers, tuberculosis sanatoria, etc. Short periods of observation are provided for a few visitors whose experience and distinction in public health warrant special dispensation.

Before accepting the candidate, the Training Division submits a copy of the application or a sketch of professional background to the school of public health or other authority under whose sponsorship the study is to be undertaken. Every effort is made to place the applicant in accordance with his special needs as determined by the work he will be called upon to do when he returns home. When approval has been received from the sponsoring authority, the Training Division makes detailed arrangements for diplomatic clearance, travel, payment of stipends, tuition fees and allowances for text-

books. The number of details involved in these arrangements is surprising. Staff members of the division constantly supervise and assist the visitors by field visits and by a continual flow of personal correspondence. This constant contact has been imperative in the interest of promoting good will and in assuring the governments that the purposes of the program are being fulfilled.

The experiences of this program form a novel chapter in the history of public health training. Never before has the government of the United States supported a policy of training public health workers from other countries. Never before has such an elaborate procedure been set up to accommodate these visitors. Never before have our training facilities been called upon to receive so many students from outside our own country. The development and maintenance of such a program have not been easy. On the one hand it has been necessary to find placement to meet individual needs of a group with diverse professional backgrounds; on the other hand, it has been essential to establish and maintain good will between the visitors and our own people. It has been necessary to do this at a time when our institutions were subject to trying wartime pressures and were involved in preserving basic teaching standards with reduced personnel.

The program is succeeding only because of the generous and unselfish cooperation of the public health profession. On every hand its members are responding with a cordial desire to be helpful and with a willingness to undergo considerable personal sacrifice. Some of our public health leaders are wondering if this sacrifice to visitors from abroad is worth while. It is not easy for the busy administrator to explain the details of his program to someone whose professional grasp may be limited and whose command of English is even more limited. In the professional schools these visitors do not fit easily into group teaching methods, but require considerable individual instruction. Behind the polite and sometimes casual mask of these students is a sincere thirst for information and a desire to put this new knowledge to work with the limited tools available. Cooperating professional workers in this country would feel amply rewarded if they could see what these students are doing to promote public health when they return to their countries. There is no doubt that most of our visitors have been inspired by personal contacts and stimulated by their studies and observations. It is evident from our visits to returned Institute trainees that public health in their countries is already reflecting the benefits of United States methods and the personalities of our public health leaders.

PROBLEMS ARISING IN TRAINING PERSONNEL FROM OTHER COUNTRIES

Several types of problems have arisen in connection with the work of the Training Division of the Institute of Inter-American Affairs. Some had been foreseen, some were unpredicted, and others arose as a result of wartime conditions. But most of these problems will attend efforts to train professional workers from any other country. The experience of the Training Division should be useful in any such future efforts. The authors here enumerate general types of problems encountered in the Institute program, accompanied by suggestions which may aid in future procedures to accommodate students from other countries.

Selection—The most serious failures in the Institute training program have arisen from faulty selection of candidates. In spite of every effort on the part of our representatives in these countries to choose deserving men, occasionally we received students whose selfish interests predominated, whose political ambitions were greater than their interest in public health and the welfare of their coun-

tries, or whose age or inexperience proved to be insurmountable handicaps. Once such a student is received, he becomes a burden to his sponsor, is constantly unhappy in his work, and is apt to infect others with his dissatisfaction. Our best candidates are those who are sincerely interested in the welfare of their country, who have sound educational backgrounds, and desire improvement, and who recognize the difficulties involved in orientation to the customs of another country.

Before accepting a candidate from abroad, the sponsor should examine carefully his professional credentials with special attention to educational background, nature of employment, and type of training desired. Recommendations are most important. It is fairly safe to accept an applicant who has been recommended by an international agency with representatives abroad, such as the Institute of Inter-American Affairs, the Rockefeller Foundation, etc. It is possible that in the future such a candidate can be certified by the health section of the United Nations. Meanwhile, public health administrators should hesitate to accept candidates from other countries unless their professional background is known or unless they are certified by an international agency of recognized integrity.

Study Funds—Closely related to the problem of selection is that of subsistence funds for these students. In our visits to Institute trainees, we have frequently seen non-scholarship students who were seeking funds to help them complete their programs. Their plight is quite depressing and the effectiveness of study is undermined by worry over means of support. None of these visitors should have come to this country without funds sufficient to cover travel, subsistence, and tuition. It is our experience that, exclusive of travel, the sum of $2,000 will be needed to cover the costs of a year's study period. It is to be hoped that candidates from other countries will be allowed to undertake study here only under scholarship grants or with some guarantee that private funds will be adequate. This problem should be remedied at the source by direct action of the United States diplomatic missions in refusing student status visas unless it is shown that sufficient funds are available. Until this is done we believe that our public health administrators have the right to refuse sponsorship of a student who cannot supply evidence of funds sufficient to complete a proposed study program.

Professional Placement—It is not easy to decide for these students where they can find the program best suited to their particular needs. Only a few of them will know where they want to study. The majority will need guidance regarding where to go, how long to remain, what type of program to undertake, and where they can secure the experience most needed for their special purpose. It is essential, for instance, that men from tropical countries should receive different training from men who plan to work in temperate climates; it is likewise important that men who plan to work in rural areas should not be placed too long in metropolitan institutions. Moreover, men from countries where public health progress has been slow will need training in basic concepts which would not be appropriate for men from countries where developments are advanced. Without some preliminary direction there is a tendency for these trainees to concentrate in a few centers which might be socially desirable but which are not necessarily suited to the individual needs. Some plan must be evolved for the distribution of these students among the various schools and health departments. This will be discussed further in the section on Coördination of the Program.

These visitors will not fit into any mold of classroom instruction designed by schools of public health. However, most of them will profit from a general pattern of such schools, providing they can receive the individual guidance which the faculty of these schools should be prepared to give. Others will profit more from special programs or assignments to health departments, laboratories, tuberculosis hospitals, sanitation facilities, etc. It is essential that these placements be made before the arrival of the candidate and that the program originally prescribed be followed strictly. Some of these visitors develop a desire to change their programs and decide to "look around." Such changes will not be conducive to good training and may be a source of embarrassment to the sponsors. Much of this trouble could be avoided by complete agreement between sponsor and student at the beginning of the program. If the details of agreement were approved in writing by the applicant, the sponsor would be relieved of responsibility if the visitor were tempted to make subsequent changes in his program.

Adjustment to Study Program—The student from abroad does not find it easy to adjust to study programs that are familiar to our own students. He expects to find different customs of study but does not anticipate so much actual work in the laboratories. He plans to work hard but does not expect to find such punctilious schedules nor such high standards of achievement. Teaching methods

in this country are considerably different from those in European and South American schools where there is less "learning by doing" and where punctuality and regular attendance at classes are less the rule.

Lack of English is the most serious barrier to academic progress. Although many visitors have studied English before arrival here, very few will have a grasp of the language sufficient to adjust to the varying tempos, qualities, and accents of our teachers. It is not easy for them to learn to think, write, and read technical material in a strange language. Although familiarity with English will vary somewhat with the country from which these men come, it is safe to assume that most of them will need English training before they can benefit from study experience. Less than 20 per cent of the trainees from Latin America are able to speak and comprehend enough English upon arrival to carry them through a normal study program. Fortunately, some of the schools of public health have provided special courses in technical English and individual tutorial services. Several universities conduct English Language Institutes which offer a most unique and successful approach to this problem. It is to be hoped that the methods used in these Institutes will become more widely available. Until such methods are adopted more generally, we shall lose much valuable time and efficiency in the training of students from non-English speaking countries. Certainly sponsoring agencies should hesitate to accept students from abroad without first determining their language capabilities.

Personal Adjustment—In addition to professional problems, these students must face certain personal problems that retard normal progress during their visits in the United States. Most of them are married and must look forward to a rather long separation from their families. They miss their natural diets and the usual comforts of home life. Their circle of friends is limited and their social contacts are restricted. In some instances they are frowned upon as "foreigners" and feel isolated because of this discrimination. Most of them have language difficulties that increase this feeling of isolation. There is at times a lack of security in their professional positions at home which causes considerable preoccupation. It is surprising how frequently these personal matters interfere with the efficacy of study programs. Fortunately, their sponsors have usually recognized these problems and have made cordial efforts to provide friendly counsel and to enlarge their social contacts. These efforts should be continued and broadened if success is to be achieved in training of personnel from other countries.

Coördination of Program—The Training Division has served as a coördinating agency for its program. It has known the particular public health needs within a given country. It has usually known where applicants could find the most suitable work in the United States. It has been able to work closely with ministries of health, with the embassies and the Department of State and with the public health administrators in this country. It has been possible by these means to make satisfactory selection of candidates, to effect an equitable distribution of these people among our institutions, and to offer an overall supervision of the program. This plan of central coördination has proved highly desirable and has relieved our institutions of considerable responsibility. There is no doubt that public health authorities should continue to make all final decisions on acceptance of such candidates, but they should not be called upon to decide upon their professional integrity or eligibility for study grants. Nor should they be called upon to handle all the detailed arrangements in such matters as visas, travel, English instruction, contacts with their governments, and overall supervision. They can hardly be expected to plan the distribution of scholarships to assure that no school of public health or health department will be overloaded. These matters could all be handled more effectively by the establishing of an information service which would be familiar with the status of public health in other countries as well as with the training facilities available in the United States. This agency should be able to work closely with the Department of State, with international health organizations, and with our own public health people. Its functions should be advisory but should not be concerned with the professional program of any individual student once it is established. Such a central clearing house to gather and disseminate information could serve all official and voluntary agencies conducting programs for training nationals from other countries.

COMMENT

Facilities for the training of public health personnel in many of the countries of the world have been seriously depleted during the war. Resources for such training in the United States have not only been preserved but in many instances have been improved in spite

of the war. Moreover, increasing numbers of visitors from other countries have been using our training facilities in recent years. It is our opinion that the public health profession in the United States should accept its share of the responsibility for the training of personnel from other countries. We believe that such a course will bring generous rewards, not only in strengthening international relationships in public health, but also in promoting our own technical knowledge through the exchange of common professional interests.

Interdepartmental Committee for the Coördination of Medical Training Film Production

The War and Navy Departments, U. S. Public Health Service, and Veterans Administration realizing the proved value of films and film strips in the training of those who are interested in the field of medicine have by coöperative effort established an Interdepartmental Committee for the Coördination of Medical Training Film Production.

It is the purpose of this committee to develop production facilities and programs in an orderly and balanced manner and to eliminate in so far as is possible unnecessary duplication of effort. To accomplish its purpose, the committee at regular meetings discusses and decides upon: essential aspects of films or other training aids in production; films or other training aids urgently needed; and the agency which possesses facilities essential to the production of a new project.

All visual aids planned and produced are being classified under a limited number of headings, each representing a general field of knowledge pertinent to medicine. Certain agencies possess facilities and subject material suitable for each field of knowledge referred to, hence the appropriate agency is designated in each instance to produce the aid required. Any agency which contemplates departure from this general plan brings the matter to the attention of the committee and an appropriate solution to the problem is agreed upon by all members.

It is further the desire of all concerned to make available in the future for loan to medical schools, medical groups, individual physicians, and those engaged in activities considered a part of medical service, who are bound by professional ethics, motion pictures and other visual aids in so far as it is possible within the legal limits imposed upon each visual aid produced.

The committee is composed of the following agency representatives:

Medical Department, U. S. Army—Edward M. Gunn, M.D., chairman; Ruth U. Baker, Recorder.

Bureau of Medicine and Surgery, U. S. Navy—Captain L. R. Newhouser (MC) USN, Joseph Herzman, M.D., Captain R. V. Schultz (MC), W. C. Lown, USNR, and N. Walter Evans.

U. S. Public Health Service—Bernard Dryer, Jean Henderson, and Alberta Altman.

Veterans Administration—E. H. Cushing, M.D., Joe Beattie, and A. Graham Eddy.

The World Health Organization: Cornerstone of Peace*

THOMAS PARRAN, M.D., F.A.P.H.A.
Surgeon General, U. S. Public Health Service, Washington, D. C.

AND

FRANK G. BOUDREAU, M.D.
Executive Director, Milbank Memorial Fund, New York, N. Y.

THE most far-reaching step in history to promote health among the world's peoples was the unanimous adoption of the Constitution of the World Health Organization and its signature by representatives of sixty-one governments in New York City on July 22, 1946. This Constitution, a Magna Carta for world health, was the chief product of an unprecedentedly successful conference, the first to be convened by the United Nations and the largest and most representative international health conference in history.

Plans for the new World Health Organization—which is to be the supreme world authority in health matters and to become eventually universal in scope, extending its benefits to all peoples in all lands—are now in the stage of execution. Blue prints have been prepared, discussed, and perfected. In the form of the Constitution adopted in New York, these blue prints are now being sent to the partners in the enterprise—the governments of the different countries, representing the world's peoples—for formal approval according to their various constitutional procedures. Two governments, those of the United Kingdom and China, have already ratified the Constitution, thereby pledging themselves to work for world health and to support the World Health Organization financially and otherwise. When twenty-four more of the United Nations have taken similar action the new World Health Organization will come into being. In the meantime the plans have been presented to the central organs of the United Nations. They have been reviewed by the Economic and Social Council which was responsible for organizing the conference, and they will be considered by the coming Assembly which has been requested to make funds available for the work of the Organization. Anticipating the Assembly's approval, the United Nations have advanced funds for the interim work of the Organization.

The world has never been in greater need of a World Health Organization whose avowed objective is the attainment by all peoples of the highest possible level of health, defined as a state of complete mental, physical, and social well-being and not merely the absence of disease or infirmity. For the world is slowly convalescing from severe and long continued attacks of mental, physical, and social diseases which will leave their marks upon generations yet to come. If recovery is to take place

* To be presented before the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 12, 1946.

at all, the world's peoples must be given the food and medical treatment adapted to their desperate condition. It will be the duty and responsibility of the World Health Organization, working closely with other agencies of the United Nations, to help the world's peoples back to health and sanity.

The unanimous adoption of a Constitution for the World Health Organization was not the only achievement of the New York Conference. It brought together for the first time after the war, representatives of virtually all nations, including certain ex-enemy nations. It is worth while recalling that after the first World War, a conference on health was the first to bring together representatives of nations which a few months before had been at each others' throats. The delegates and advisers of the sixty-four nations which attended the New York conference got along so well together and agreed so generally on essentials that the conference received comparatively little attention from the press. Like a happily married couple, the conference did not make news.

The conference took the steps necessary to insure that existing international health services would continue pending the ratification of the Constitution and the actual setting up of the new Organization. It provided for the absorption or gradual merging of all existing international health agencies with the World Health Organization thereby insuring the creation of a single world health authority, an achievement for which health experts have struggled for more than a quarter of a century.

In a field where endless difficulties might have been expected, the conference moved boldly ahead. The World Health Organization will not come into being until twenty-six of the United Nations have ratified the Constitution. In the meantime, world health problems are acute and pressing, and the machinery for international health work has, to some extent, broken down. So the conference decided to set up an Interim Commission to carry on essential international health activities and to prepare the way for the new World Health Organization. That Commission consists of representatives of eighteen governments. Dr. Fedor G. Krotkov, the distinguished delegate of the U.S.S.R., was chosen as its first chairman. When he found himself unable to attend further meetings because of his pressing duties at home, the Commission selected Dr. A. Stampar of Zagreb to succeed him. Dr. Stampar, who is acting chairman of the Economic and Social Council of the United Nations, is known to health officers throughout the world for his pioneering health work in Yugoslavia between the two world wars. The Commission selected Dr. G. Brock Chisholm of Canada as its Executive Secretary, and Dr. Chisholm has appointed Dr. Yves Biraud of the League of Nations Health Section to assist him. Temporary headquarters of the Commission are located in the building of the New York Academy of Medicine, and preparations are under way for a further meeting of the Commission in Paris or Geneva during the month of November. The action of the conference in setting up an Interim Commission, and the promptness of the Interim Commission in getting down to its work proved that the delegates to the conference appreciated the need for quick action to launch the Organization which is expected to bring health to the world's ailing peoples.

A less tangible achievement of the conference was nonetheless important. Individuals experienced in international work will tell you that such and such a conference was a great success while another was a sore disappointment. The basis for these opinions may not

be found in the records, for it is a question of atmosphere. The United Nations Conference on Food and Agriculture at Hot Springs in 1943 is regarded as a model from this point of view. We are convinced that in years to come, the International Health Conference held in New York City this last summer will be looked upon as the starting point for a world health campaign which will bring up the health of the world's peoples to new heights. For the delegates and advisers averaged high in personality, knowledge, and good will. As the conference proceeded they grew to like and respect one another and to work well together. Frankness and sincerity characterized the discussions; bickering over minor points was uncommon. In this atmosphere enthusiasm for the work ran high and the delegates vied with one another to make the greatest contribution to the success of the conference. Hence, the conference generated sufficient enthusiasm and good will to insure a successful launching for the new World Health Organization. Now that the participants have gone home, it is to be hoped that they will become centers of enthusiasm and good will for world health throughout the whole world.

Facts concerning the World Health Organization have been widely published. An excellent editorial on the subject appeared in the September issue of the *American Journal of Public Health*, and the Constitution of the World Health Organization is being printed in full in the November issue of the same *Journal*. This will give every health officer an opportunity to familiarize himself with the origin, structure, and functions of the World Health Organization. Our purpose tonight is not to repeat these facts but to inquire into the significance of international health work in relation to the greatest problem which faces mankind, the maintenance of world peace. What part can the World Health Organization play in preventing war and in helping to organize peaceful relations between the nations? The Constitution, in its preamble, speaks out boldly on this subject:

> The health of all peoples is fundamental to the attainment of peace and security.
>
> The achievement of any state in the promotion and protection of health is of value to all.
>
> Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger.
>
> Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.

We suggest that the American Public Health Association and its constituent societies should invite the Executive Secretary of the Interim Commission, Dr. G. Brock Chisholm, to speak on a subject which is close to his heart and of which he is master—how our children can acquire the ability to live harmoniously in the changing total environment of the present world. No subject could be of greater significance at this period in the world's history. For the international position is tense; the world's equilibrium is threatened; a new world war might well be the last act of a desperate society struggling blindly for survival and in that struggle dying of self-inflicted wounds. The hope is that our children may be brought up as citizens of the world in which they must live or die: tolerant of their neighbors, whether in the same town or halfway around the world, and working together with all men in all lands, of every race, color, and creed, for the benefit of all mankind.

"The health of all peoples is fundamental to the attainment of peace and security."

Superficial observers will say that wars have not always been started by the nations with the worst health

records, that the most recent and devastating wars are the responsibility of highly developed peoples with a high standard of living and a good health record. But, according to the Constitution, health is not merely the absence of disease or deformity, it is a state of complete physical, mental, and social well-being. Moreover, a glance at the map will show that the trouble spots of the world—the areas which are now disturbing international relations—are those in which poverty, malnutrition, and disease are rife. Rioting has broken out in India which has experienced a terrible famine in recent years, which is still on hunger rations, and where malnutrition is rife; nor is India a stranger to devastating epidemics of plague and cholera. Fighting has broken out on the frontiers of Greece where for ages famine, poverty, and disease have been the close companions of the people. China is torn by civil war, and again famine, disease, and poverty have reduced to misery the life of the inhabitants in the areas where fighting rages. And so it goes over the whole world, inside of the different countries, no matter how highly developed, as well as on their frontiers. We in this country are singularly fortunate in the freedom and security we enjoy, but we cannot forget that many of our difficulties and social disturbances originate in our counties, cities, and states where the expectancy of life is the lowest, where infant mortality rates are the highest, and where general health records are the worst. There is no escaping these facts. What a boon it would be to our people if the low sickness and death rates enjoyed by the counties, cities, and states with the best health records could be extended to all!

"Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger."

Here is another way of saying the same thing that we have just said, but from another point of view. Everyone knows that the only way to protect our country from an invasion by pestilential diseases is to deal with these diseases at their sources—in the countries and areas where they originate. Even more than this is needed; we must destroy the insect vectors in their breeding grounds which carry those diseases. For as Raymond B. Fosdick remarked two years ago, an airplane will carry a mosquito from Africa as easily as it will carry a passenger, and we cannot entrust the safety of our country and our people to the hit or miss of a flit gun. Nor can we be sure that no rats will land on our shores from ships which may have become infected at plague infected ports. But we cannot exterminate plague and yellow fever and typhus fever in their homes by campaigns launched against these diseases alone. For this purpose all round competent health services are needed, and a well trained and alert medical profession. So there must be good medical and public health schools, suitable laboratories and hospitals, modern nursing and proper health centers.

The health services cannot function unless there are proper facilities for communication and transport. You cannot fight disease which may be spread by automobiles and airplanes by sending reports of cases by messenger; you must use the telegraph or the radio. And so it goes. Unequal development in health matters cannot be improved by measures aimed at improving health and nothing else; a whole series of economic and social measures are required, and in the end nothing less than economic and social improvement or rehabilitation will suffice.

Hard lessons in the school of experience have taught us that we live in one world—that a murder in Sarajevo or violence in Danzig may set the whole

world ablaze. We must now learn that we also live in one world as regards social and economic affairs, and that we cannot attack one social or economic problems with success; there must be an integrated approach to every international problem. That does not mean that we cannot begin with an attack on health problems. There is much to be said for this policy, and the success of the New York health conference shows that there is already a large measure of agreement among nations in this field. While beginning with health however, it is necessary to go on until a campaign has been launched against unequal development of the different countries in many economic and social fields.

Two years ago at the 73rd Annual Meeting of our Association, Raymond B. Fosdick, in a notable address on "Public Health as an International Problem," predicted that the residual problems which the war would leave in its wake would far transcend in difficulty and ominousness the problems which we had faced during the war. To deal with those problems he foresaw the pressing need for "rallying points of unity, centers around which men of differing cultures and faiths can combine, defined fields of needs or goals of effort in which by pooling its brains and resources the human race can add to its own well-being." The activities of a new international health organization could "dig new channels of thought and establish fresh methods of approach" to those problems. Such activities "could lead the way in showing the countries of the world, now separated by hatreds and passion, what it means to play ball together."

How difficult and ominous are the problems which the war has left in its wake: the control of atomic energy, the settlement of displaced persons, the rehabilitation of devastated regions, the threat of inflation in some countries and the results of it in others, the lack of food, the spread of famine and malnutrition and, above all, the moral and intellectual bankruptcy of mankind and its leaders! Faced with these difficulties and dangers mankind is seeking rallying points of unity, centers around which men of differing cultures and faiths can combine. The political institutions of the League of Nations in which men placed their hopes after the first World War failed when put to the crucial test. The international social and economic institutions which grew up almost unperceived in the League proved unexpectedly resistant. Today we are witnessing the establishment of new political institutions and new social and economic agencies, designed to solve the greater and more pressing problems which have developed during the war or which have been accentuated by war conditions. Foremost among the latter is the World Health Organization, destined, we hope and pray, to be a rallying point of unity, and to teach men of different nations what it means to play ball together. Health for the world's peoples is inscribed on its banner and under that banner men of all races, creeds, and colors can unite.

In the world before the war, coöperation in health matters led the way in international coöperation. In this field new ventures were attempted, new methods evolved, new technics established which proved useful in wider fields. That the present World Health Organization may build and expand on these foundations must be the wish and the prayer of everyone present tonight.

But to organize peace and to prevent war, appropriate machinery must be created to deal with all of the world's social, economic, and political problems, for, as we have been reminded on so many occasions, peace is one and indivisible. So we must work for every one of the new political, social and economic institutions: the Food and Agriculture Organization of the United

Nations, which has already, in less than a year made considerable headway; the International Labor Organization; the United Nations Educational Scientific and Cultural Organization; the International Bank for Reconstruction and Development; the International Refugee Organization; and the World Trade Organization (these last two yet to be established); and the central organization of the United Nations with its General Assembly, Security Council, and Economic and Social Council, and many others.

By force of events we have become citizens of the world. These same forces have broken down the barriers which have separated the peoples of the world for centuries and have replaced them with bands of steel linking them together ever more closely. As citizens of one world we must work together for the benefit of all or be at odds with each other for the benefit of none—for the extermination of mankind. As world citizens we must support and sustain the institutions which men of good will from all countries are creating to bring order out of chaos in our international relations. To be a good citizen of the world or of any part of the world requires knowledge of the problems which threaten us all, and support of the activities which are being undertaken to deal with these problems. Given public understanding of the problems and aims of the agencies which are being created to solve them, there is no need to fear for their success. Specialized groups, like the members of the American Public Health Association, have special duties and responsibilities. Programs of health education must include education for world as well as national and individual health. Members of the Association should be foci of enlightenment, scattered throughout the land, teaching the gospel of health to all who will hear, so that government and people may understand and support the aims and work of the World Health Organization.

We have much to give to the world in the field of health but we have also much to learn from other countries. In the field of medicine and public health no nation has a monopoly. Three of the greatest advances in the prevention and treatment of disease during recent years have come to us from abroad: the sulpha drugs from Germany, penicillin from England, and DDT from Switzerland. By pooling world knowledge and experience, and taking advantage of every advance in any country the whole world will benefit.

More than a hundred years ago the effort began which culminated in the signature by representatives of 61 countries of the Constitution of the World Health Organization on July 22, 1946. The unanimous adoption of that Constitution, far-reaching in scope and universal in appeal, was the next to final step in the establishment of a universal World Health Organization. When the final step will be taken, and how successful the Organization will be in healing the wounds of war and spreading health among the world's peoples, depend upon the understanding, interest, and support of men and women like those in this audience in the different countries of the world. With such support the World Health Organization may well become a rallying point of unity for the world's peoples, a center around which men of differing cultures and faiths can combine, a cornerstone in the structure of peace.

The Sanitary Engineer Looks Forward*

ABEL WOLMAN, DR.ENG., F.A.P.H.A.

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AT this first Inter-American meeting of sanitary engineers and public works officers, I have been assigned the vulnerable task of attempting to present a prospect in the field of sanitation over the next several decades. Even under the most favorable circumstances a prophet is literally "without honor in his country." Fully realizing the risks of prophecy it still seems helpful to let one's imagination range over the field with the indulgence of the representatives at these sessions.

Many years ago the late President A. Lawrence Lowell of Harvard summarized the years following wars in these terms:

> It is hardly an exaggeration to summarize the history of four hundred years by saying that the leading idea of a conquering nation in relation to the conquered was in 1600, to change their religion; in 1700 to change their laws; in 1800 to change their trade; and in 1900 to change their drainage. May we not say that on the prow of the conquering ship in these four hundred years, first stood the priest, then the lawyer, then the merchant, and finally the physician.†

This all too brief summary, with the necessary modifications and expansions appropriate to the complex world in which we now live, is as generally applicable today as it was many decades ago. The damages created by war were paralleled by the realities of the peacetime periods before World War II. A review of the countries of the world prior to 1933 would have disclosed the need for immediate service in the field of sanitation, a need only dramatized by the exigencies of war.

Destruction of water supplies in the Ruhr, the damage to sewerage systems in Coventry, the destruction of the water supplies of Manila, either by direct bombing or by deliberate sabotage, reëmphasized the importance which these orthodox necessities of normal living played even in most favored countries. Cholera, typhoid, dysentery, malaria, and typhus, only a few of the scourges of the world, are not only warborne. They are the normal accompaniments of the peacetime pursuits of man. The insanitary conditions which caused them prevailed before the war and confront us throughout the world after the war. History merely demarks the cyclical rises and falls in their intensities. Wars, depressions, and famines awaken the world to this continuing of the struggle of man for protection against his own environment.

It is not an exaggeration to say that Great Britain, France, and the United States of North America would all derive advantages from the effective control of yellow fever or malaria. While China or Iran would no doubt benefit from the sanitary engineering experience of the Western World, this does not mean that the Western World itself is living in a Utopia freed of the neces-

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* Presented before the Inter-American Sanitary Engineers, Rio de Janeiro, June 10, 1946.

† cf. Winslow, C.-E. A., International Organization for Health, Commission to Study the Organization of Peace, 1944. New York, N. Y.

sities of controlling the envirnomental diseases.

This much only can be said, that in those countries blessed with rich resources, with organized public service, and with a rapid rate of public works installation, progress in the control of the environmental diseases has been more rapid. How to transmit these blessings to countries or parts of countries historically less favored thus becomes perhaps one of the most important future assignments of the statesmen in sanitation. For India, with its 400,000,000 people; for China, with its almost 500,000,000; for the 250,000,000 Europeans, the 100,000,000 Arabs, the 185,000,000 Russians, and the 200,000,000 Latin Americans, the problems of sanitation are essentially the same as those which confronted us in the past and will press us for the future in North America.

The differences in problem throughout the world or within the Western Hemisphere alone are those of timing, of finance, of social organization and public persuasion. Challenges such as these to the sanitary engineer are not limited by political boundaries, by language, by racial difference, or by economic philosophy. They must be met on each ground within the framework of geographical and political setting. It is still true, as Professor George C. Whipple pointed out many years ago, that "the world is bound in bacterial bonds." To break those bonds requires energy and perspective on a world-wide base and not a nationalistic adherence to geographical or political limits of activity.

WHAT AILS THE WORLD

To discover future possibilities and necessities for sanitary engineering function one need only turn to a brief review of the diseases that disable and kill in the world. What are they, where do they occur, and when may they be conquered with the resources now available? Many years ago I pointed out that "the ghosts of environmental disease have been laid in literature but not in fact." Once more war has reminded us of the validity of this observation. The same thought was exemplified in the country of one of your associates, Dr. Afranio Peixoto, when he stated in 1941 that "an enfeebled pestilence is not a danger past."

The key to the future activities of the sanitary engineer, therefore, must rest upon the fact, as Colonel Dieuaide has so well stated, that "preventive medicine has not yet abolished any disease. The price of health security is eternal vigilance."

My emphasis on these considerations stems from the fact that the superficially minded, the hasty diagnostician, and the "nouveau" expert, all jumping from one new slogan to the next, tend to forget that the victories of the past presuppose continued protections for the future. Control of the environmental disease cannot rest upon such fits and starts of organization or concept.

In a recent discussion of China's health problems, Dr. Szeming Sze points out that on any one day among the 400,000,000 people of China, 16,000,000 persons are sick. With a death rate of 25 per 1,000, over 10,000,000 people die every year. He estimates that of the 10,000,000 deaths 4,000,000 are unnecessary deaths each year, and probably three-quarters of these unnecessary deaths are attributable to the excessive incidence of gastrointestinal diseases, the infectious causes of infant mortality and pulmonary tuberculosis. No inconsiderable portion of this morbidity and mortality is due to the absence of any of the elementary provisions for the protection of water supply, for the elimination of sanitary wastes or for the control of insect-borne disease.

In India the situation is more than paralleled. The toll taken by the gastrointestinal diseases, by the diarrheas of children, by the malarias of all ages is staggering in its magnitude and devastating in its restrictions in the opportunity of people to develop their resources to the utmost. So widespread and so dramatic are these tolls in India that in the 1945 issue of the British *Who's Who,* a distinguished leader in India lists under the heading of his "Recreation": "propaganda for rousing the sanitary conscience of the people in the matters of public health . . . research in intestinal flagellate protozoa and fermentation bacteria." Even allowing for the strong diversions which this intellectual may permit himself, it is a tribute to his recognition of the plight of his people that these efforts in the field of sanitation loom large in competition with the more familiar tennis, walking or swimming.

Conditions, of course, are paralleled in almost every country of the globe where the diseases of filth still reign supreme as the major cause of death and of misery while still alive.

Many observers have already pointed out that these problems of the environment cannot be disposed of or masked by referring to them as "tropical diseases." They are neither tropical in origin nor restricted by latitude. Historic accident may emphasize their tropical location, but the conditions which engender them cannot be easily or accurately relegated to the tropics. Colonel Dieuaide properly points out that there are in fact few truly tropical diseases. The diseases so classified are the stock in trade of India and China, for example.

Cholera and plague are tropical only because they have been successfully driven into areas not yet capable of wiping them out. By the Grace of God, money, and sanitary organization, they are rare in Western Europe or the Americas. No one, of course, discounts the relationship of geography to disease, but in the field in which we are today active the future holds challenges to the sanitary engineer that are not circumscribed by the tropics or by the remote areas of the world.

When we compare, for example, the principal causes of death in the United States of North America and in Latin America, we find that the major difference in the problem is one of time. In 1900, diarrhea-enteritis and typhoid fever were among the 10 leading causes of death in the United States. In 1937, diarrhea-enteritis was still among the 10 leading difficulties. Typhoid fever had been curbed, not abolished, as will be pointed out later on.

In Latin America, however, the six diseases or combinations of diseases which seem to stand out as the principal causes of death are tuberculosis, diarrhea-enteritis, malaria, infant mortality, pneumonia, and heart disease.

Perhaps the major health problem of Latin America as a whole is malaria when we consider its complete incapacitating power. Even though dysentery and the general intestinal parasites do not appear among the six principal causes of death in Latin America, because their killing power is low, they still present one of the major problems in public health because of their profound debilitating effect on individual vitality.

If we were to review these statistical implications of environmental diseases of the world as a whole, we cannot escape the conviction that the diseases subject to the controls by the engineer will be by far the most important health problem confronting the world for many decades. It is not too much to say that the greatest probable source of accomplishment in the reduction of morbidity and mortality in the world would be through environmental sanitation.

FUTURE FUNCTIONS OF THE ENGINEER

All that has been said above makes it reasonably obvious that the engineer of the future is confronted with both an unlimited task and an engrossing opportunity. The normal functions which he has been called upon to perform in the past are all too familiar to you. His functions for the future in the fields of water supply, sewerage, air control, housing, insect control, rodent control, remain essentially the same. Their geographical spread, their rate of application, their expansion in understanding will all need to be speeded up. Perspective will no doubt require an expansion beyond that ever envisioned before. These opportunities in the post-war period are well summarized, even though briefly, in the opening paragraph of the Progress Report of the Committee of the American Society of Civil Engineers on Advancement of Sanitary Engineering, 1946. The committee's words are as follows:

> All surveys of the personnel needs of the post-war world indicate an increased demand and expanding field of service for sanitary engineers. In the realm of public health; in the design, construction, and supervision of sanitary works; in the armed services; in far-flung relief and rehabilitation activities; in educational work; in many types of industry; in the design, manufacture, and sale of sanitary equipment; in the food handling and processing industries; in some fields of municipal government; in the vast and long neglected realm of housing, and in many other activities—there is increasing need for the services of trained and experienced sanitary engineers.

That there is much to be done everywhere cannot be gainsaid. It is appropriate perhaps to point out that these comments are as pertinent to our activities in North America as they are in Latin America or any other country in the world. It is too early to forget that in the latter part of 1939 in the Manteno State Hospital of Illinois 543 cases and 60 deaths occurred from a typhoid fever epidemic. The causes may still appear to be debatable, but strong evidence implicates the sewage pollution of the water supply of that institution.

During 1943, for example, there were 389 outbreaks of disease in the United States of North America transmitted by water or food. They caused 23,665 cases of reported illness and 56 deaths. The unreported cases probably represent many times those actually listed.

These " ghosts " of the environmental diseases still walk the streets of North America.

THE PROBLEM OF MONEY

One of the great difficulties in the control of environmental diseases is that any effective procedure requires money. The pernicious cycle of disease to poverty to disease represents perhaps one of the most important challenges to the sanitary engineer. What are the devices by which environmental structures may be designed, constructed, and operated more cheaply than they are now? By what measures is it possible to reduce the unit cost of purifying water, of treating sewage, of controlling insects and rodents?

In some of these fields the war fortunately has produced possibilities of materials and of equipment which are less expensive than those available before the war. Some of these have immediate application and use in the control of environmental diseases. The engineer, however, must develop new techniques of financing which would make it possible for governments throughout the world to apply the known solutions to the devastating problems of disease.

These meetings will offer an opportunity for much discussion on the problems of financing the installation and the operation of many devices for sanitation. It has long been my judgment that too little study has been given to financial procedures. These matters

have been too frequently relegated to administrative officers unfamiliar with their importance or insufficiently ingenious to develop new procedures for paying for sanitary installations. The provision of money is an essential sanitary engineering objective which must be emphasized for speeding up future activity.

What relationship there should be between central and local governments in the provision of money is not only a matter of political philosophy from country to country but also a matter of local availability of funds. In some countries it is no doubt true that most of these activities can be adequately financed through local units of government. In others it is equally obvious that central governments must do much in the next decade to help carry the financial burdens made necessary by sanitation.

I have no pretension to being able to point out where these real responsibilities should be lodged. They are mentioned here primarily to focus attention on their key importance to sanitary engineering progress throughout the world.

ADMINISTRATIVE STRUCTURES

Of almost equal importance in the introduction of sanitary reform in any country is the development of the administrative structures necessary to execute and to operate the installations required. Here, too, political philosophy dominates the scene.

There is perhaps no general law, other than that of expediency, which will determine how much local autonomy and responsibility should prevail in contrast with the responsibilities of the central government.

Each country again would probably find the most successful relationships established out of the history of its attributes, its political origins, its racial combinations and its advance along the road to healthy democratic institutions.

In this field, too, the sanitary engineer has a part to play. He must familiarize himself with the lessons of other countries in administrative management and structure. He cannot, of course, slavishly apply the lessons of other countries to the solution of the problems of his own country. He can, however, suggest and devise administrative structures which would facilitate the purely managerial phases of environmental sanitation. He should be able to share the values to be obtained from central government stimulation with the preservation of local autonomy and responsibility. The countries in Latin America, for example, give demonstrations over the entire spectrum of central-local government equilibrium. Such a permanent group as is here assembled should in the course of time introduce objective analyses of these various forms of governmental administrative structures. Out of such analyses should come various examples of how best to establish the governmental machinery for the most rapid and effective introduction of sanitary structures and measures.

EDUCATION AND RESEARCH

To accomplish the objectives all too briefly discussed, the development of sanitary engineering staffs will be required. Such development will place upon the universities of the Americas a task which cannot be lightly treated. Here, too, this group should in the not too distant future evaluate the requirements, the status, and the type of education and training which will be demanded for the most effective practice of sanitary engineering.

Suggestions for curricula for accredited schools of sanitary engineering and public health may very properly be one of the early assignments of such a group as this.

A necessary concomitant of a program of education for professional workers lies in the field of research. Much remains to be discovered in the general field of environmental sanitation. Many investigative tasks are still ahead. Fundamental data on many of our activities are still lacking.

The development of essential features of a research program is an additional assignment to serious minded members of this group.

PROFESSIONAL STATUS

All of us are aware that the sanitary engineer not only has a struggle with the physical environment, but has likewise the task of strengthening his capacity and his position in the field of public health activity. This cannot be accomplished by sleight of hand.

His status in the future, whether strong or weak, will rest upon the quality of his equipment and of his performance.

One of the best ways of intellectual group-fertilization is in the strengthening of such a professional group as here assembled. The range of problems which it might with profit discuss and survey covers the status, the professional training, the pay, and the public position of the sanitary engineer. All of these will be issues of the future which remain to be argued, measured, and promulgated.

SUMMARY

Problems requiring the energies of sanitary engineers are world-wide in character. They are intellectually stimulating and cover a service to the people of the world transcended by no other activity. A necessarily limited review of these problems and of possible solutions has been presented. A scope of activity has been defined for the sanitary engineer of the future which can be no longer delimited by the purely technological. Political philosophy, financial program, administrative structure, and public education are all essential bases for sanitary engineering action. Technology alone will not bring on the rapid correction of the evils engendered by insanitation.

Although I might not aspire to the heights of imagination exemplified by the following comments of one of our contemporary authors, I cannot escape the essential validity of his argument. His words are a fitting closure to the limited observations here made:

> Let no cultivated reader despise these details (lavatories, sinks, sewers, and manholes). There is no truer sign of civilization and culture than good sanitation. It goes with refined senses and orderly habits. A good drain implies as much as a beautiful statue. And let it be remembered that the world did not reach the Minoan standard of cleanliness again until the great sanitary movement of the late nineteenth century.—J. C. STOBART. *The Glory That Was Greece.*

Insect Tests of Wire Screening Effectiveness

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WINDOW screening for protection against flying insects has been manufactured for approximately ninety years with few changes in its form and structure during that time. During the last year a new type of wire window screening was introduced and over 60 million square feet have already been produced. This screening has rectangular rather than the common square mesh openings and is woven with 18 warp (length) wires and 14 filler (width) wires to the inch instead of the usual 16 wires per inch in both warp and filler. The conversion from 16 x 16 to 18 x 14 mesh increased the output considerably since the warp wires were fixed in position and the shuttle had only 14 trips to make per linear inch of screening instead of 16.

The possibility that the new 18 x 14 mesh screening might be used in place of 18 x 18 mesh screening was considered and this study was undertaken to determine quantitatively the comparative effectiveness of the 16 x 16, 18 x 14, and 18 x 18 mesh screening as well as other mesh sizes of screening having both square and rectangular mesh openings.

HISTORICAL

There are few references in the literature giving what might be termed a quantitative comparison of the effectiveness of different mesh sizes of screening. Rosenau,[1] referring to previous experimental work at Veracruz, noted that the *Aedes* mosquito could pass through 15 x 15 mesh, but not 18 x 18 mesh screening. Boyd[2] found that coarse mesh screening, such as 12 x 12 or 14 x 14 mesh, afforded a certain amount of protection against anopheline mosquitoes, as estimated from malaria incidence. Earle,[3] in Puerto Rico, observed that standard 16 x 16 mesh screening would afford protection against all insects but the small culicoides. Herms and Gray[4] reported that standard 16 x 16 mesh screening does not exclude many *Aedes* and some *Anopheles* species. For army requirements, the War Department[5] considered the openings of the regular 16 x 16 mesh too large. The standard 18 x 18 mesh wire screen, however, was said to exclude both malaria-carrying and the smaller insect pests.

MATERIALS AND METHODS

The sizes of wire screening used in these tests were 18 x 18, 16 x 16 and 14 x 14 mesh for those having square mesh openings and 18 x 16, 18 x 14, and 18 x 12 for those having rectangular mesh openings. All screening was made with standard diameter wire of 0.011 inches.

To obtain a quantitative comparison of the effectiveness of different meshes of screening, insects were raised in the laboratory and were tested for their ability to penetrate the screening

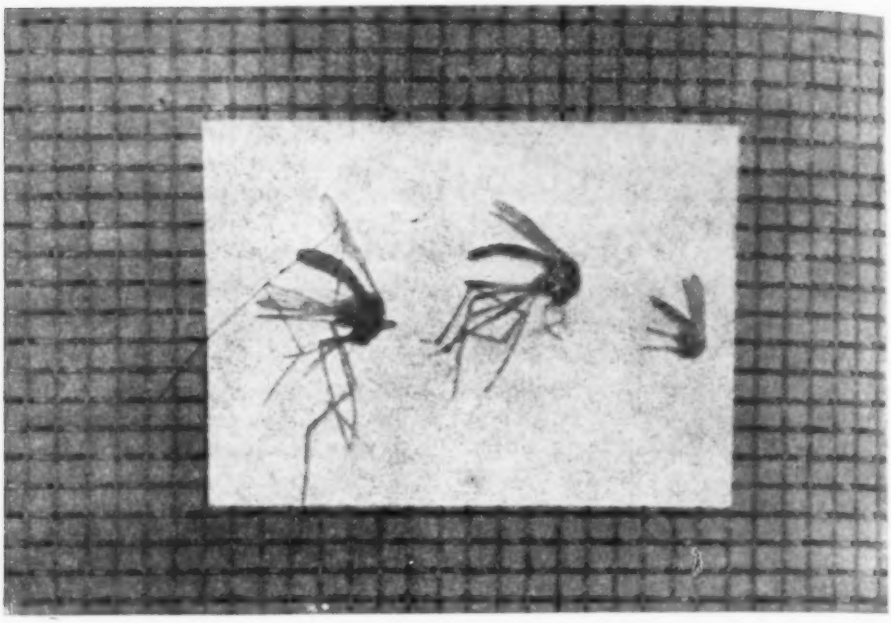

FIGURE 1—Relative Sizes of Test Mosquitoes—Left to Right, *Anopheles quadrimaculatus*, *Aedes aegypti*, and Undersized *Aedes aegypti* (16 x 16 Mesh Screen)

under laboratory conditions. The insects used for the tests included the common housefly, *Musca domestica*, the malaria-carrying mosquito, *Anopheles quadrimaculatus*, the common southern house mosquito, *Culex quinquefasciatus*, and the yellow fever transmitting mosquito, *Aedes aegypti*. Undersized *Aedes aegypti*, produced by overcrowding and underfeeding in the larval stage, were also used. The sizes of the mosquitoes are given in Table 1. Figure 1 illustrates these comparative sizes as against the size of the mesh openings of a sample of 16 x 16 mesh screening. Outdoor tests demonstrated the effectiveness of the screening against small light-attracted insects such as leaf hoppers, gnats, and tiny moths.

The adult laboratory-bred insects were introduced into screened cages 12″ x 4″ x 2″. The cages were then closed and placed inside gauze-covered glass museum jars. After 48 hours in the laboratory at 85° F. and ordinary room-lighting conditions the insects were gassed with ethylene dichloride and the numbers both inside and outside the screened cages were counted.

Preliminary laboratory tests showed that the following experimental conditions had no effect on the ability of the insects to penetrate the screening: lighting conditions (except for direct

TABLE 1

Size of Mosquitoes Used in Screening Tests

Common Name	*Scientific Name*	*Length of Body (inches)*	*Width of Body (inches)*
Malaria Mosquito	*Anopheles quadrimaculatus*	0.20	0.04
Southern House Mosquito	*Culex quinquefasciatus*	0.18	0.04
Yellow Fever Mosquito	*Aedes aegypti*	0.16	0.027
Yellow Fever Mosquito—(undersized)	*Aedes aegypti*	0.12	0.020

sunlight which was lethal to the mosquitoes); age of insects; and the number of insects in the test cage.

PENETRATION OF SCREENING

In tests employing all of the above listed mesh sizes of screening no individuals of *Musca domestica, Anopheles quadrimaculatus,* or *Culex quinquefasciatus* penetrated any of the screening tested. Of the laboratory raised insects only the normal sized and, to a greater extent the undersized, *Aedes aegypti* were able to pass through the mesh openings and escape from the screened cages.

The percentages of mosquitoes escaped from the screened cages is given in Table 2. Column 1 of Table 2 gives the nominal mesh size of each screening sample as specified, while column 2 gives the actual mesh size as determined experimentally. In column 3 is given a value which is common to all mesh sizes of screening, namely, the diagonal of the square or rectangular mesh openings, which is the longest dimension of the opening.

Upon examination of the data in Table 2 it is observed that the percentages of mosquitoes escaped are related to the lengths of the diagonals of the mesh openings. This might be anticipated from the fact that a mosquito is an animate object and therefore would attempt to find the line of greatest clearance for its wings in crawling through the opening. Figure 2 presents the percentages escaped plotted as a function of the lengths of the diagonals. The curve for the normal size *Aedes aegypti* may be said to have three divisions: the cut-off range where mosquitoes were entirely excluded; the central portion where screening was directly proportional to the length of the diagonal; and the range where the screening became ineffective as a barrier to insect penetration. The curve for the undersized *Aedes aegypti* has the same general shape as that for the normal size *Aedes aegypti* curve, but is displaced from it.

According to the data in Table 2 there was no difference in the ability of the normal size *Aedes aegypti* to penetrate 18 x 14 or 16 x 16 mesh screening. Although there was an apparent difference between the 18 x 14 and 16 x 16 in the tests of the undersized *Aedes aegypti,* this difference was directly in line with the actual mesh size of the screening rather than the nominal mesh size, as is indicated by the curve in

TABLE 2

Laboratory Screening Effectiveness Tests Employing Aedes aegypti Mosquitoes

Mesh Warp x Filler (Wires/Inch)		Length of Diagonal of Mesh Opening (inches)	No. of Test Runs	Number of Mosquitoes		Per cent Escaped
Nominal	Actual			Tested	Escaped	
Aedes aegypti — Normal Sized						
18 x 18	18 x 18.7	0.0616	7	249	0	0 ± 0
18 x 18	18 x 18.4	0.0622	4	141	5	3 ± 3
18 x 18	18 x 17.6	0.0639	4	108	5	5 ± 2
18 x 16	18 x 15.5	0.0697	4	95	12	13 ± 3
16 x 16	16 x 16.2	0.0723	17	621	88	14 ± 3
18 x 14	18 x 14.3	0.0739	14	466	66	14 ± 3
18 x 12	18 x 12.5	0.0822	8	280	116	41 ± 6
14 x 14	14 x 14.2	0.0847	10	331	181	55 ± 6
Aedes aegypti — Undersized						
18 x 18	18 x 18.7	0.0616	6	193	11	6 ± 2
18 x 14	18 x 14.6	0.0728	6	236	66	28 ± 6
18 x 14	18 x 14.4	0.0736	4	136	44	32 ± 8
16 x 16	16 x 15.0	0.0759	7	223	112	50 ± 6

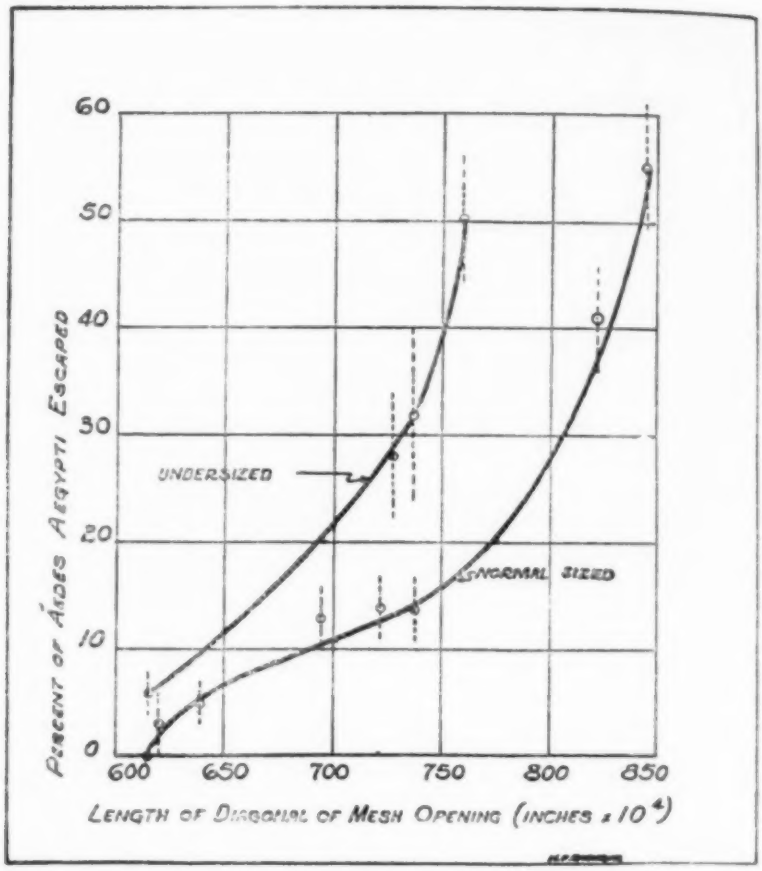

FIGURE 2—Effect of Length of Diagonal of Screening Mesh Openings on Mosquito Passage. Laboratory Tests

Figure 2. If the length of the diagonal is truly the criterion of screening effectiveness, then the 18 x 14 mesh is theoretically slightly less effective than the 16 x 16 mesh screening because the diagonal of screening exactly 16 x 16 mesh is 0.0728 inches while that for 18 x 14 mesh is 0.0751 inches. It is highly improbable, however, that this small difference could be of any practical significance.

Any discussion of screening having exactly the designated mesh size is purely theoretical. In the production of wire screening manufacturers are permitted a tolerance of ± 0.5 mesh in the filler direction and ± 0.25 mesh in the warp direction, regardless of the mesh size. The influence of these tolerance limits as they could affect screening effectiveness is portrayed graphically in Figure 3 by superimposing the limits for 18 x 18, 16 x 16, and 18 x 14 mesh screening on the curve (Figure 2) for the normal size *Aedes aegypti*. It is noted from Figure 3 that while the limits for 18 x 14 and 16 x 16 mesh screening overlap, the 18 x 14 lower limit extends further into the range of greater insect passage. If the manufacture of 18 x 14 mesh screening is to continue to replace 16 x 16 mesh it would seem advisable to narrow the lower limit of the filler wire

tolerance for the 18 x 14 mesh screening. Greater care should also be urged upon securing uniformity in the spacing of the filler wires of 18 x 14 mesh screening, for any irregularity in the spacing of the 14 filler wires to the inch would result in greater avenues for insect entry than the same irregularity with screening having 16 wires to the inch.

ORIENTATION OF SCREENING

Since the screening commonly used has square mesh openings there is no distinction as to whether the screening is mounted with the warp wires vertical or horizontal. However, when screening has rectanugular openings the question arises as to which direction of mounting would give greater effectivness. Table 3 compares the 18 x 14 and 18 x 12 screening in both the vertical and horizontal positions. The warp direction is the major axis of the rectangle. The difference between the percentage escape for the vertical and horizontal positions of the 18 x 14 mesh was not significant, indicating no advantage in either orientation. With the 18 x 12 mesh, however, the difference was significantly in favor of the vertical position. With the screening in the vertical position the diagonal of the rectanugular opening is directed at an angle from 45° to 90° depending on the proportional lengths of the sides. When the screening is horizontal the diagonal may vary from 0° to 45°. Since the mosquitoes are generally on the screening with their bodies in a vertical direction, it would seem easier for them to adjust their wing clearance by having to turn only 0°–45° rather than 45°–90°. The greater the difference between lengths of the sides, the closer the diagonal approaches 0° and 90° and the greater the difference in insect passage that would be expected between the vertical and horizontal orientations. Eventually, however, the rectangularity produced by the increase in the number of warp wires at the expense of the filler wires (as for example 20 x 10, 22 x 8, etc.) would result in a mesh opening having less width than the insect's body, thus preventing passage regardless of the orientation. This condition would be of no practical importance since the lack of sufficient filler wires would make such screening highly vulnerable to distortion under conditions of wear and tear.

SEX OF THE MOSQUITOES

Inasmuch as it is only the female mosquito that bites and is a vector of disease, it was of special interest to determine whether there was any difference in the ability of the sexes to get through the mesh openings. In a sampling of 1,443 mosquitoes, representing tests using all of the sizes of the screening being studied, the males

TABLE 3

Comparison of Screening Effectiveness with the Major Axis (Warp) of the Rectangular Mesh Openings, Vertical and Horizontal

		Aedes aegypti Mosquitoes			
Mesh Warp x Filler (Wires/Inch)	*Direction of Major Axis*	*Number of Mosquitoes Tested*	*Number of Mosquitoes Escaped*	*Mean Per cent Escaped*	*Difference*
18.0 x 14.3	Vertical	274	37	14 ± 4	1 ± 5
18.0 x 14.3	Horizontal	192	29	15 ± 3	
18.0 x 12.5	Vertical	203	74	37 ± 7	24 ± 11
18.0 x 12.5	Horizontal	131	80	61 ± 9	

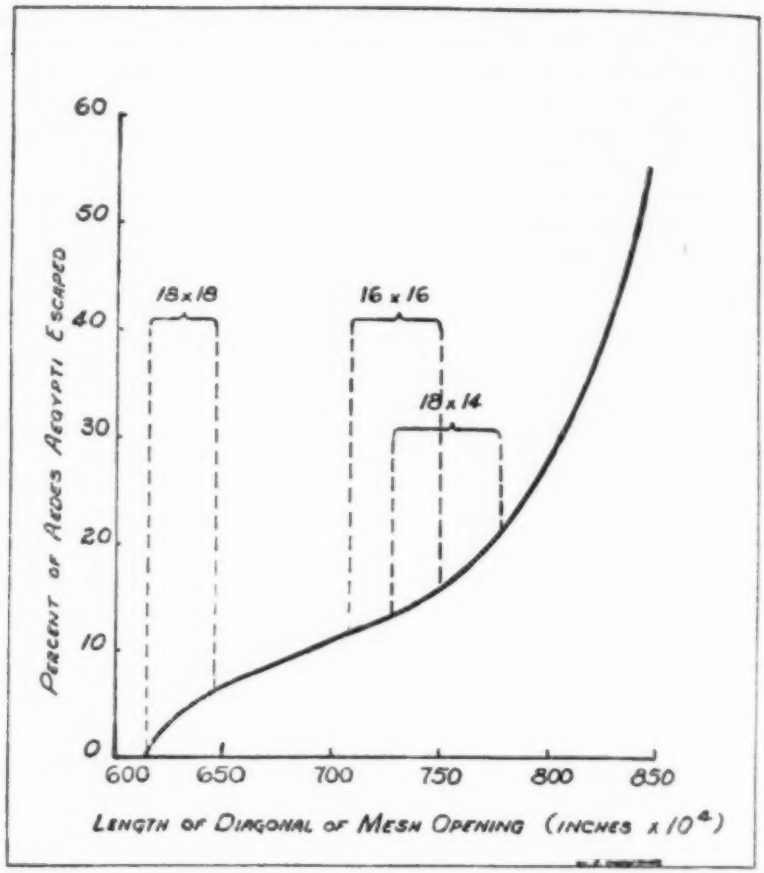

FIGURE 3—Permissable Commercial Limits for 18 x 18, 16 x 16, and 18 x 14 Mesh Screening Superimposed on Passage Curve for Normal Size *Aedes aegypti* Mosquitoes

TABLE 4

Influence of Sex of Mosquito on Ability to Pass Through Screening

Aedes aegypti Mosquitoes

	Females	*Males*
Population Sampled	498	945
Per cent of Population	34.5	65.5
Number escaped	84	134
Mean Per cent of Each Sex Escaped	14 ± 3	17 ± 4

and females of those escaping and those remaining inside the screened cages were recorded. The results are given in Table 4. Of the total population 34.5 per cent were females and 65.5 per cent were males. Of the total number of females sampled 14 ± 3 per cent escaped from the cages, while of the total number of males present 17 ± 4 per cent escaped. The difference was not significant, indicating that the results of mosquito penetration for the whole population apply equally well to the female mosquitoes.

SMALL LIGHT-ATTRACTED INSECTS

In tropical and semi-tropical climates the small light-attracted insects such as leaf hoppers, gnats, and tiny moths, and diurnal biting pests such as sand flies are nuisance factors over long periods of the year. It was therefore thought worth while to compare the effectiveness of different mesh sizes of screening against these small insects. Screened

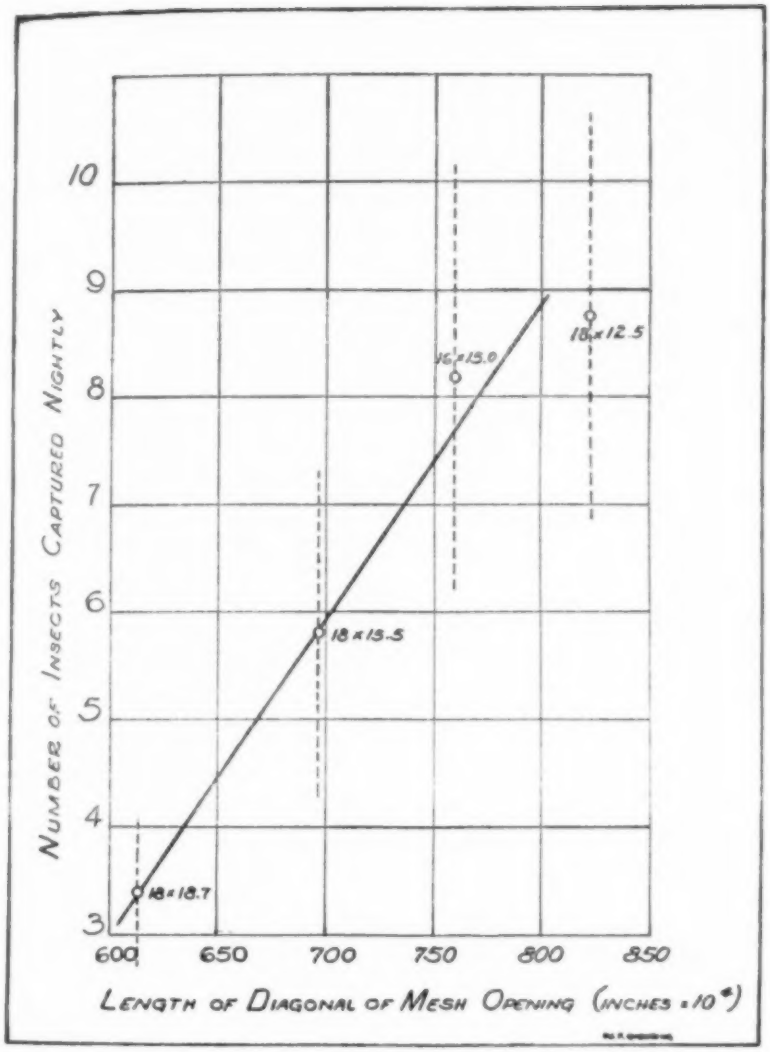

FIGURE 4—Effect of Length of Diagonal of Screening Mesh Openings on Insect Passage. Field Tests

cages 1½′ x 1½′ x 1½′ were constructed and a small electric light placed in each. Underneath each light a large sheet of sticky paper was placed to capture the infiltrating insects. The cages were placed out of doors and each day for a period of three weeks the number of small flying insects on each sheet of sticky paper was counted and fresh sheets replaced. The results are given in Figure 4. The average number of insects captured nightly is plotted against the average length of the diagonals of the individual mesh openings of the screening tested. Like the curves for the laboratory mosquito tests, the insect penetration appears to be a function of the longest dimension of the mesh openings. It is apparent from this curve, and borne out by actual practice, that the 16 x 16 mesh screening is not satisfactory for protection against these small insect pests. Only 18 x 18 mesh, or preferably finer meshed

screening, can be counted on to present an appreciable barrier to these tiny flying invaders. It should be pointed out, however, that screening down finer than 18 x 18 mesh is limited by the factors of cost and the reduction in air circulation and visibility through the screening.

SUMMARY AND CONCLUSIONS

Laboratory tests were run to determine the comparative effectiveness of different mesh sizes of window screening against flying insects. The screening tested had the nominal mesh sizes 18 x 18, 16 x 16, 14 x 14, 18 x 16, 18 x 14, and 18 x 12, although the actual mesh sizes as determined experimentally differed somewhat from the specified nominal sizes.

The ordinary housefly, *Musca domestica,* the malaria transmitting mosquito, *Anopheles quadrimaculatus,* and the common southern house mosquito, *Culex quinquefasciatus,* were unable to penetrate any of the mesh sizes of screening tested. Both the normal sized and specially bred, undersized yellow fever mosquitoes, *Aedes aegypti,* were able to escape from the screened test cages. For the mesh sizes of screening tested, the percentages of *Aedes aegypti* passing through the mesh openings appeared to be related to the longest dimension, the diagonal, of these openings.

The new 18 x 14 mesh screening and the standard 16 x 16 mesh screening appeared to be equal in effectiveness against *Aedes aegypti* mosquitoes. Orientation of the 18 x 14 mesh screening with the warp direction vertical and horizontal did not appear to influence the screening effectiveness. With the 18 x 12 mesh, the warp oriented in the vertical position appeared to be more effective than in the horizontal position.

No differences were encountered in the screening of male or female *Aedes aegypti* mosquitoes.

Outdoor screening tests against the small light-attracted insects also showed the screening effectiveness to be related to the diagonal of the individual mesh openings. For localities where small flying insects such as gnats, leaf hoppers, and sand flies are abundant or where the smaller mosquitoes such as *Aedes aegypti* and the salt marsh mosquito, *Aedes taeniorhynchus,* are prevalent, the use of 18 x 18 mesh screening is indicated.

ACKNOWLEDGMENT—This problem was carried on with the coöperation and financial assistance of the Insect Wire Screening Bureau. Appreciation is expressed to Ralph Bacon of the Insect Wire Screening Bureau, to Dr. J. T. Creighton, Head Professor of Entomology at the University of Florida, and to Dr. R. A. Morgen, Assistant Director of the Florida Engineering and Industrial Experiment Station for their helpful suggestions and criticism.

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An Analysis of the Effect of Fat in the Diet on Recovery in Infectious Hepatitis*

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INCREASING attention has been given in recent years to the dietary treatment of diseases of the liver. Information supplied from the growing fields of nutrition and metabolism has resulted in the abandonment of nearly all the older methods employed in the therapy of hepatic insufficiency, and in the adoption of numerous new measures which in many instances have provided a sharp contrast to those which were formerly in use. Proof of the essentially rational nature of the concepts which form the basis of current therapy in diseases of the liver has been afforded by the achievement of increasing success in a field of medical endeavor which was once outstanding for its spectacular failures.

The medical literature on diseases of the liver abounds with specific guides, frequently diametrically opposed in character, for the selection of an optimum diet for the treatment of hepatic insufficiency in man. Until the turn of the century, diets prescribed for patients with liver disease were generally low in all constituents. Carbohydrate was avoided because it was believed that intestinal fermentation might arise and contribute further to a state of impaired absorption. Foods high in protein were rejected because it was maintained that the metabolism of nitrogen required additional expenditure of energy on the part of the diseased liver. Fat was eliminated from the diet so far as possible, in the belief that there was insufficient bile for its proper absorption. It was not until 1914 that experiments were performed which showed that diets high in carbohydrate afforded measurable protection against damage to the liver by certain hepatotoxic agents, such as chloroform and carbon tetrachloride.[1] The discovery by Goldschmidt and his coworkers[2] of the value of protein in protecting the liver from damage by hepatotoxic agents encouraged the inclusion of protein-rich foods in the diet. Since that time, diets high in protein and carbohydrates have been almost universally accepted as optimum for repair of the liver, although results secured by Mann[3] in the treatment of experimentally induced liver disease in animals, indicate that the type of protein in the diet may be highly important.

Notwithstanding the appearance of numerous recent publications on the dietary treatment of diseases of the liver, the data given thus far have been too inconclusive to permit the establish-

* The Bureau of Medicine and Surgery of the U. S. Navy does not necessarily endorse the ideas set forth in this paper.

ment of any one diet as superior to others in the management of hepatic insufficiency. Most of the reported data have dealt with the influence of diet on recovery from acute damage to the liver in animals and on chronic diseases of the liver in man. Few experiments have been described which deal critically with the effect of diet on recovery from acute hepatic insufficiency in human subjects. It was decided, therefore, to explore in considerable detail the effects of various experimental diets of widely different composition on the clinical course of a group of patients with infectious hepatitis, in order to obtain information necessary for the selection of a diet of optimal composition for the treatment of acute liver disease in man.

Opportunity to study a selected group of patients with acute hepatic insufficiency came about through the development of a collaborative program of research with the U. S. Navy, by which large numbers of officers and enlisted men with infectious hepatitis were sent to the Rockefeller Hospital for observation and treatment. A review of the general clinical and metabolic features displayed by 200 patients from this group has been published elsewhere.[4] One aspect of the study concerned attempts to evaluate the influence of diet on the course of recovery from the disease.

Of the various recognized forms of hepatitis, that due to a filterable agent is by far the most prevalent at the present time. Although the onset of hepatitis bears a close analogy to that of acute infections in general, the subsequent course of the disease is more characteristic of a metabolic disorder resulting from serious damage to the liver than of an infectious process. In most cases, sex, age, a previous state of good health and absence of complications in the disease were common factors in the patients selected for study. Hence it was necessary to take into account only the natural variations in severity in the disease, in order to evaluate the effect of diets of varying composition on the period required for convalescence. An attempt to control these variations was made by strict alternation of patients through the various dietary and control regimens. Moreover, only those patients who were hospitalized early in the course of hepatitis were selected for study in order to minimize the influence of variations in the interval between the development of the initial signs of the disease and the subsequent imposition of a given dietary regimen on the length of time required for recovery.

A wide divergence of opinion has been expressed with respect to the optimum intake of fat in liver insufficiency. Ravdin [5] has long inveighed against the inclusion of more than a minimum of fat in the diet in the treatment of hepatic disease. Patek,[6] on the other hand, has achieved promising results in the treatment of patients with chronic liver insufficiency with diets which were high in protein and which contained as much as 175 grams of fat.

Unless every care is exercised to insure the best possible intake of food in patients with hepatitis through frequent feedings and by careful selection of food, the caloric intake may fall during the first days of the disease to less than one-third of that required for the maintenance of body weight. A diminished caloric intake in the early stages of the disease would appear to be doubly hazardous, since according to current opinion it is during this period when injury to the liver is likely to be greatest.

In our experience, diets low in fat have contributed further to anorexia, largely because of their unappetizing character. Since diets low in fat are also low in calories in relation to their bulk, it was frequently impossible to secure sufficient intake in patients on

this regimen to meet the caloric requirements of the patients without exerting exceptional persuasion and occasionally resorting to parenteral feeding. The dictum against the inclusion of fat in the diet in infectious hepatitis doubtless arose from an earlier notion that the disease was associated with obstruction of the major bile ducts. Subsequent studies of the pathological changes which occur in hepatitis, however, reveal that it is primarily a disease of the hepatic parenchyma [7, 8] and not of the major bile passages, as claimed by Virchow.[9]

Recently the use of diets low in fat has seemed justified from results of studies which show that the production of necrosis of the liver in experimental animals by various deficiency diets is greatly facilitated by the inclusion of large quantities of fat in the diet. It should be remembered, however, that necrosis and fatty infiltration of the liver have been produced consistently only by severely limiting the intake of protein and other lipotropic agents such as choline and methionine. It seemed quite unsound, therefore, to anticipate liver injury from diets high in fat and which were also rich in protein and other lipotropic agents.

It appeared that the inclusion of a liberal amount of fat in the diet of patients with hepatitis would assist materially in the management of hepatic insufficiency by facilitating the maintenance of an adequate caloric intake and permitting a wide selection of protein and other types of food which appeal to the appetite.

In an attempt to determine whether this could be done without harmful consequences, a group of 37 patients * with acute infectious hepatitis were studied on a diet relatively high in fat and protein and the results compared with a group of 33 alternate cases maintained on a diet low in fat and high in protein. The fats used in the experimental diets were derived chiefly from milk, cream, butter and eggs. Carbohydrate was permitted in quantities necessary to meet the appetite requirements of the patient. No restriction was imposed with respect to the total caloric intake. In each instance, the patient was encouraged to consume the maximum amount of food which was compatible with his appetite and comfort. In the average case this amounted to approximately 150 gm. of fat and 150 gm. of protein for the first diet and 50 gm. of fat and 150 gm. of protein for the second. When it was necessary to alter the diets in order to meet the caloric requirements of certain patients, the relative proportion of the various constituents of the diets was kept constant.

A number of criteria were used in an evaluation of the effect of the diets on the course of the patients' recovery from hepatitis. Results obtained from liver-function tests performed at weekly intervals, values for the net loss and gain of weight, and finally the total number of days required for complete recovery, in so far as this could be ascertained from all available laboratory and clinical data, were among the criteria applied in comparing the effects of the various diets.

The experimental diets were taken without complaint, and as far as could be determined, no adverse effects were observed to follow the use of either diet. The diet high in fat and protein appeared to have definite advantages over the diet low in fat and high in protein with respect to the relative ease with which an adequate caloric intake could be achieved and maintained (Figure 1). The effect of anorexia in decreasing the total caloric intake, particularly in the acute stage of hepatitis, was far more effectively overcome with

* The first four cases of this group were consecutive cases.

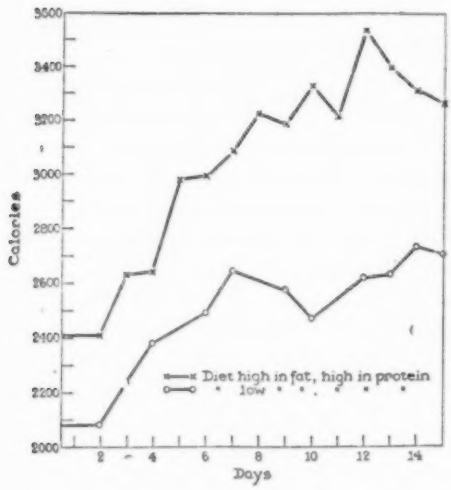

FIGURE 1—A Comparison between the Average Daily Caloric Intake of a Group of 10 Patients with Hepatitis on a High Fat, High Protein Diet and a Group of 10 Alternate Patients on a Diet Low in Fat and High in Protein

the diet relatively high in fat. This difference is readily seen from an inspection of the curves in Figure 1, which show the day-to-day average total caloric intake of the two groups of patients. The accelerated gain in weight (Figure 2) shown by the group receiving the high fat intake, over that shown by the group receiving the low fat intake, attested further to the greater effectiveness of the former diet in aiding the patients to regain the early weight loss in hepatitis. In nearly every instance, patients on the diet high in fat began to gain weight almost immediately in contrast to the patients on the low fat intake, in whom often no weight change was apparent for approximately two weeks following the institution of the diet.

Evidence indicating that the diet high in fat and protein was effective in favoring recovery in hepatitis was supplied by the results of at least one test of liver function, namely, the retention of bromsulfalein. This test, which we have reason to believe is one of the most sensitive available for indicating changes in the liver in hepatitis,[4] was performed on each patient in both series upon admission, and at weekly intervals throughout the course of convalescence. Results obtained on 30 patients (15 in each group), in whom the two dietary regimens were instituted within the first week of the disease, and maintained throughout convalescence, revealed that normal values for bromsulfalein retention were obtained on the average by the 25th day in the group on the high fat, high protein regimen, and by the 33rd day for the group receiving a diet low in fat and high in protein. The time required for both groups was considerably less than that necessary for a larger series in whom treatment with the two diets was begun somewhat later in the course of the disease. The results indicate that for maximal effectiveness treatment by diet should be begun as early as possible in hepatitis. In this way, through careful attention to the patients' reaction to food, opportunity is provided to offset the effects of anorexia in reducing

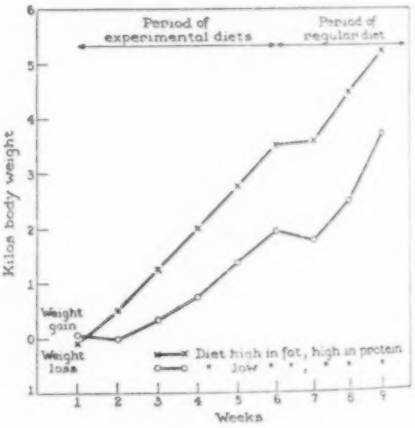

FIGURE 2—A Comparison between the Average Weekly Increase in Weight in a Group of 37 Patients with Hepatitis on a Diet High in Fat and High in Protein and in 33 Patients on a Diet Low in Fat and High in Protein

the total caloric intake in the early stages of the disease when hepatic damage is likely to be greatest.

DISCUSSION

It is obvious from the results of these studies that the prevailing dictum against the inclusion of fats in the diet in the treatment of acute infectious hepatitis is unjustified. Indeed, slavish commitment to diets extremely low in fat has made the task of maintaining an adequate caloric intake in acute liver insufficiency needlessly difficult. Indictment of fat as a "liver poison" has proceeded within recent years from the experimental production of damage to the liver in animals consuming diets which were excessively high in fat. It should not be forgotten, however, that in order to achieve significant damage to the liver with diets high in fat it has been necessary to restrict the intake of protein to exceedingly low levels. In addition, review of the experimental data reveals that in the selection of the fatty components of the experimental diets, extreme care has been exercised to exclude phospholipids, choline and other lipotropic agents.

Contrary to current medical opinion, patients with acute inflammatory disease of the liver, such as that produced by severe hepatitis, have been shown by the results obtained in this study to tolerate fats extremely well. No adverse consequences followed the consumption of 150 gm. of fat daily, together with the ingestion of an approximately equivalent weight of protein. The accelerated gain in weight which followed the inclusion of fat in the diet indicated that utilization of the fat occurred in the presence of severe damage to the liver. The fact that pathological values for the retention of bromsulfalein were maintained for a shorter interval in the patients receiving the high fat, high protein diet, than in those receiving a low fat, high protein diet, indicates that the former diet may have had advantages over the latter in fostering repair of the liver. It should be emphasized that the fats used in the experimental diet high in fat were derived chiefly from milk, cream and butter, and were not subjected at any time to exceptionally high temperatures in cooking. Fats from these sources, moreover, are relatively high in unsaturated fatty acids and fatty acids of comparatively short carbon chains.

Stetten and Salcedo[10] showed that the severity of the fatty changes in the liver of animals deficient in choline was influenced greatly by the length of the fatty acid chains of the dietary fat. The intensity of the fatty infiltration observed in the liver in choline deficiency was found to increase markedly as the chain length of the dietary fatty acid successively decreased from 18 to 14 carbon atoms. However, no fatty livers were observed when esters of fatty acids of less than 12 carbon atoms were fed. Finally, it should be emphasized that the large quantity of protein which was included in the high fat diet afforded a rich source of lipotropic agents, which was further augmented by the high concentration of choline and lecithin contained in the fat itself.

In any case it is evident that present concepts regarding the toxicity of fat in the diet in the presence of hepatic damage should be redefined, and that in planning a diet for the treatment of acute damage to the liver, emphasis should be shifted from a consideration of the total amount of fat in the diet to the type of fat, and to the concentration of protein and other lipotropic agents which accompany it.

SUMMARY AND CONCLUSIONS

A comparative study has been made between the effects of a diet low in fat and high in protein and a diet relatively high in fat and high in protein on the

period required for recovery in 70 patients with infectious hepatitis in whom there was moderate to marked acute liver insufficiency.

No harmful effects were observed to follow the administration of a diet high in fat in patients in whom the intake of protein was kept correspondingly high. Indeed, the diet high in fat appeared to have decided advantages over the diet low in fat with respect to the maintenance of an adequate caloric intake, particularly in the acute stages of the disease. With the former diet, weight loss was minimal in the acute stages of hepatitis and gain in weight maximal in convalescence. Added evidence of the superiority of the high fat, high protein diet was indicated by the results of serial tests of bromsulfalein retention which revealed normal levels for the patients on the high fat, high protein diet earlier than the group on the high protein, low fat regimen.

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Post-war Program for Abatement of Pollution in New York Harbor*

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THIS discussion of the program for the abatement of pollution of New York Harbor in the post-war period will be concerned primarily with the plans of New York City. Of the population whose discharges pollute the harbor, about 70 per cent reside in New York City, about 10 per cent in the Passaic Valley Sewerage District of New Jersey, and the remaining 20 per cent in other communities in the States of New York and New Jersey.

The history of pollution abatement in New York Harbor extends over many years and until recently has been discouragingly barren in recording results of a comprehensive nature. This is perhaps not strange when we consider the multitude of political subdivisions of the area that involve many separate cities and districts lying in two sovereign states. The great natural resources of the harbor for the assimilation of sewage have been sadly overtaxed but it has been hard for individual communities to treat their sewage when other communities equally at fault are not willing to take action. This deadlock appears about to be broken since New York City, quite properly it seems, has embarked on a comprehensive program for the treatment of all of its sewage. The regional nature of the problem of New York Harbor has been recognized in the creation of the Interstate Sanitation Commission by New York and New Jersey and later joined by Connecticut, so that the political complexities now seem well on the road to solution.

New York Harbor is purged by the fresh water flows from the mighty Hudson River. Through the connection to the ocean at the Narrows and to Long Island Sound at Throggs Neck large tidal flows carry salt water into and out of the harbor and distribute and mix polluting flows throughout its large area. These very advantageous natural conditions permitted the city to proceed with its unrivaled growth and expansion without giving much consideration to sewage pollution for many years. Deplorable conditions, however, existed as long as 40 years ago and have grown progressively worse until stemmed in part by recent corrective measures. Even now there are waterways such as Newtown Creek that are in a condition of active nuisance. There are large areas otherwise adaptable for recreational use that cannot safely and satisfactorily be used for that purpose. The large ocean beaches at Coney Island and Staten Island are affected and are not adequately protected. Walkways along the waterfront in parkways at Bay Ridge in Brooklyn and the upper west side of Manhattan and elsewhere are subject to the odors

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and unsightly aspects of raw sewage flowing along the shore. The hygienic aspects will be apparent to this body.

Outside of New York City the first major project to be placed in operation was that of the Passaic Valley Sewerage District in 1924. This project resulted in the correction of extremely offensive conditions in the Passaic River, but although the sewage is given primary treatment the discharge of the effluent in New York Harbor near Robbins Reef has resulted in an added burden to the inner harbor. Other works discharging to tidewater include the South Yonkers screening plant of Westchester County in 1930, Perth Amboy in 1935, and The Joint Meeting plant at Elizabeth in 1936. The smaller works on the Raritan, Rahway, Hackensack, and Hudson Rivers are primarily of local significance.

In the area of New York City treatment plants were built as far back as 1882, but it was not until late in 1929 that the jurisdiction over sewage treatment was recognized as a city-wide function and taken from the five Borough Presidents and placed in a central city department. This function is now the responsibility of the Department of Public Works. The central department inherited some sixteen treatment plants of sorts, mostly of the fine screening type and generally ineffective as a part of the overall picture.

Construction of modern treatment works under a comprehensive plan for the entire city that takes into account all the complex elements of the problem started in 1931 on the large Wards Island project. Unfortunately this work was held up by the depression but was resumed in 1934 with federal aid and the works were placed in operation in 1937. In the meantime the first element of the Coney Island plant was built, also with federal aid, and placed in full operation in 1935. Additional plants were built with City money only. Tallmans Island was placed in operation in 1939, an extension of the Coney Island plant in 1941, complete treatment at Bowery Bay and the City Island plant in 1942, the Jamaica plant in 1943, and partial treatment at the 26th Ward plant in 1944. At the present time the city operates thirteen sewage treatment works. Six are older plants and seven are newly constructed. About 410 m.g. of sewage is treated per day representing a little over 40 per cent of the sewage originating in the city. The new works represent a cost of some $58,000,000. From the foregoing record it is apparent that New York City is fully alive to the necessity for the abatement of pollution in New York Harbor and has been making steady advances in its accomplishment.

That the accomplishments in the post-war period will be even more impressive is evidenced by the very large program that is now in a well advanced planning stage. When it became apparent in the summer of 1941 that war activities would preclude further civil construction, it was decided to proceed with detailed plans for a large schedule of essential projects that would be carefully developed and ready to build when man power and funds again became available. One of the programs holding a high priority in this schedule is that for the city-wide sewage treatment. It is listed in the Capital Program of the city in the amount of about $107,000,000 at 1939 prices. As will be seen from Table 1, this program includes 9 extensions and additions to existing locations, and the construction of 5 new plants. The present general plan for sewage disposal calls for 17 treatment locations with an installed capacity of 1,453 m.g.d. The present installed capacity is about 30 per cent of this figure and that in the post-war program about 64 per cent. When the works in the post-war program are built the city will have reached about 94

per cent of its objective. Tentative schedules call for the completion of construction and operation of the works by the end of 1950. What the realities of the situation will be is unpredictable and will, of course, be contingent on the availability of funds, upon city and other governmental policies, and the other uncertainties of a world undergoing reconstruction.

sewage treatment from the results of works now operating.

Prior to the construction of the Wards Island Project the Harlem River was a filthy stream, unsightly and odorous. Bordering areas were blighted. Since then the East River Drive has been built and is to be extended north along the Harlem. Housing developments and a high school have been built

TABLE 1

Sewage Disposal Projects — 1946 Capital Budget

Project No.	*Title*	*Total Cost 1939 Base*	*Funds Adopted*	
			City	*Federal (anticipated)*
PW 19	26th Ward	$ 6,550,000	$ 2,893,400	$
PW 112	Existing Plants	400,000	400,000	
PW 55	Rockaway	2,800,000	2,665,000	
PW 102	E. Bronx Intercept. Sewer	815,000	765,000	
PW 56	Hunts Point	14,000,000	2,340,000	6,860,000
PW 54	Owls Head	14,500,000	1,200,000	8,200,000
PW 101	Port Richmond—1st Stage	1,000,000		850,000
PW 53	Newtown Creek	25,800,000	200,000	7,000,000
PW 113	Sludge Vessels	4,000,000	30,000	
PW 103	Wards Island—Extension	29,300,000	200,000	
PW 118	Bowery Bay—2nd Stage	6,500,000	100,000	
SIF 108	Whitestone Intercept. Sewer	1,300,000		
PWS 27	Coney Island—Alterations	300,000		
PWS 28	Jamaica—Landscaping	42,000		
PWS 29	Bowery Bay—Landscaping, etc.	89,000		
HOS 2A	Welfare Island Sewers	450,000		
	Totals	$107,846,000	$10,793,400	$22,910,000

With this general overall picture of past accomplishments and future programs one may well inquire as to the necessities and urgencies that lead New York City to embark on a program of sewage treatment that will add many millions of dollars to the annual operating budget. The answer lies in the very practical matter of self-preservation. It includes the preservation and restoration of real property values, the preservation and restoration of recreational facilities, the preservation of health, and, by no means unimportant, the preservation of decent environmental conditions. Fortunately, it is possible to demonstrate the value of

on its banks and a general face lifting and reclamation of values is taking place. Thus the Wards Island project is paying dividends in a very tangible form locally and its influence is of equal importance elsewhere throughout the harbor in the general reduction of the pollutional load. In a similar way the Coney Island Project has corrected conditions of active nuisance in Coney Island Creek, Shellbank Creek, and Paerdegat Basin with consequent benefit to the value of local areas and the improvement of the nearby water areas for recreational use. Like stories can be told of the Flushing River, Flushing Bay, and Bowery Bay, near the La

Guardia Airport, as a result of the operation of the Tallmans Island and Bowery Bay plants. A marked improvement of the boating and recreational center around City Island has resulted because of sewage treatment there. Thus it is that while costly, sewage treatment pays its own way and is essential and indispensable. Had New York City not taken energetic action in this matter, values and environmental conditions would have grown progressively worse and many other important improvements would have lost much of their value.

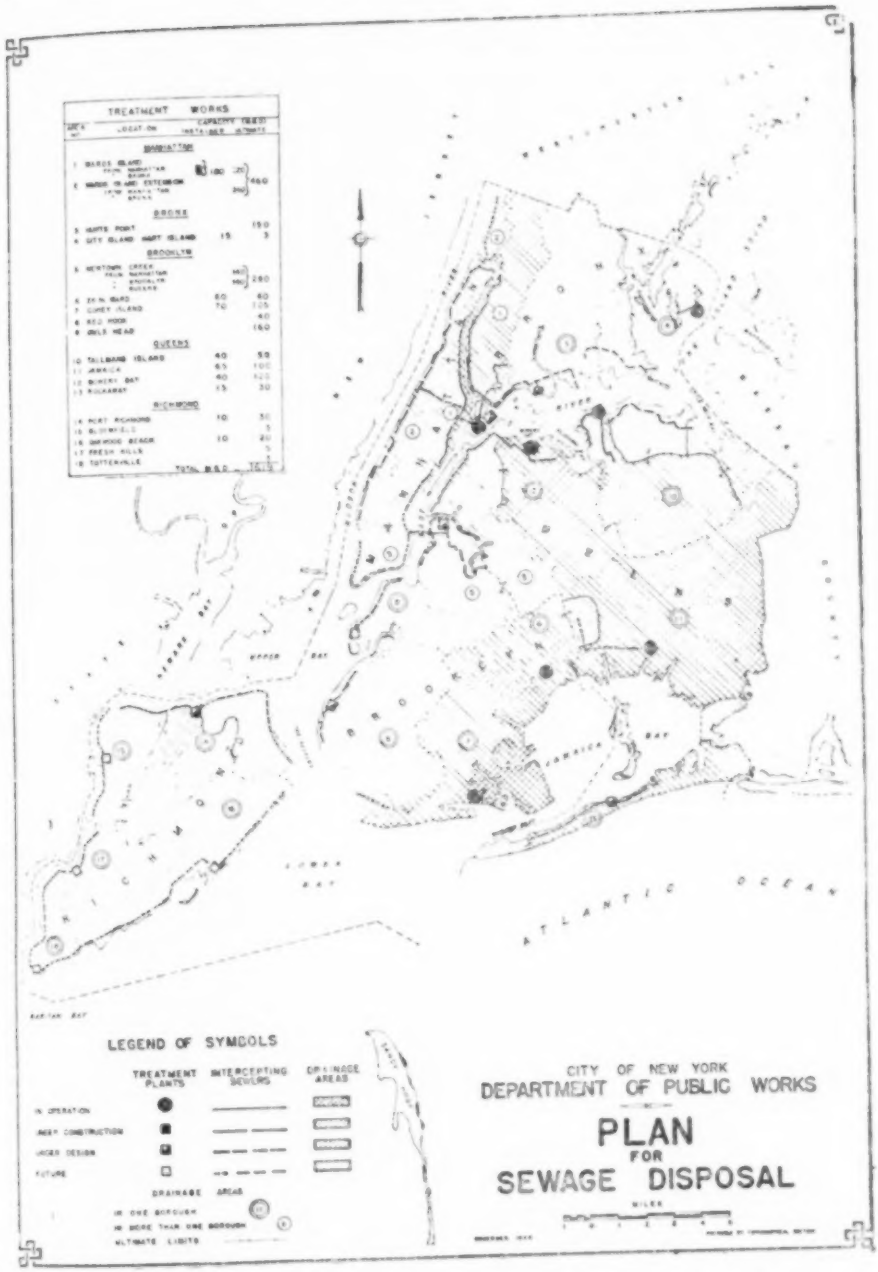
The legalistic standards for sewage treatment that now apply to the Metropolitan waters are those adopted by the Interstate Sanitation Commission, an instrument of the States of New York, New Jersey and Connecticut. These standards divide the waters into two classifications, namely "A" and " B." The " B " waters are the inner harbor waters not now used primarily for recreation, and here a treatment that will remove 10 per cent of the suspended solids and not permit the dissolved oxygen content of the waters to drop below 30 per cent of saturation is required. Actually an average treatment greatly in excess of 10 per cent removal is required to meet the latter requirement of residual dissolved oxygen. The "A" waters are the outlying waters used primarily for recreation and shellfish growth. Sewage effluents discharging into these waters must have had at least 60 per cent of the suspended solids removed and be treated so that not more than 1 *B. coli* per ml. is present in 50 per cent of the test samples. These standards furnish a convenient mechanism for administration but because of the nature of the local tidal currents do not in themselves assure that all waters in the "A" group can be safely used for recreation and shellfish growth.

The extent of treatment adopted in the New York City program is substantially higher than the minimum requirements of the Interstate Sanitation Commission and is influenced by a consideration of the effect of tidal flows on adjacent areas. In spite of the fact that New York Harbor waters receive the flows from the Hudson, Passaic, and Hackensack Rivers, and the interchange with sea water is considerable, most of the sewage remains within the harbor long enough to exert most of its oxygen demand. This is particularly true of discharges to the East River and to Jamaica Bay and it is in these areas that the most extensive treatment is given.

There are four types of treatment used in the new plants. These include the activated sludge process and modifications thereof known as " step aeration " and " modified sewage aeration." The fourth type is the seasonal chemical plant, such as used at Coney Island, but this is not called for in the postwar program. In this program four plants will incorporate the principles of " step aeration," three others those of " modified sewage aeration," and one smaller plant will call for plain sedimentation.

The " step aeration " plants are expected to give results comparable to the standard activated sludge installations, and can in fact be operated as such. The provision of means for adding increments of settled sewage at several points in the aeration tanks, in view of our past experience, has made us feel justified in reducing the size of these tanks below previously accepted standards.

" Modified Sewage Aeration " is a comparatively recent development of this department and with which we have had only two years' experience under full scale plant operation. It was evolved from experimental work started to explore the possibilities of the activated sludge process for partial treatment under low solids concentra-



tion. It is anticipated that overall removals approaching 80 per cent in B.O.D. and S.S. will be obtained, that the excess sludge can be concentrated to 5 to 7 per cent solids, and that air consumption will not exceed 0.4 c.f. per gallon. The plants will be in locations that might otherwise call for plain sedimentation or seasonal chemical treatment. The chlorine demand of the "modified" effluent is much less than for the other types.

Sludge from the new plants will be digested and digestor gases utilized for

power and heat. This is dictated by the necessity of eliminating odor hazards in the handling of raw sludge near closely built up areas and by the economics of sludge handling. While a small part of the digested sludge will be utilized on land and park areas, our main reliance will be on its disposal at sea. In the large quantities involved, this has proved to be most economical and entirely unobjectionable.

In general the types of treatment plants that are to be built are determined by our policy of utilizing the natural capacity of the local waters for the assimilation of sewage to a reasonable extent and of securing the maximum possible removal of polluting material per dollar spent on construction and operation. It is to be anticipated that future desires will be for ever cleaner waters. The present program is sufficiently above the minimum that would "get by" present requirements so as reasonably to anticipate such desires. The additional costs involved over a minimum program are surprisingly small.

If we are allowed to proceed with our program for sewage disposal as planned, the backbone of the pollution hazards in New York Harbor will be broken. Plans for other areas outside of New York City are being made. I believe dependence can be placed on the smoothly working team comprised of the Health Departments of the States of New York and New Jersey and the Interstate Sanitation Commission to see to it that the entire program for the metropolitan area advances consistently on all fronts.

Price of Care Packages Reduced One-Third

General William N. Haskell, Executive Director of Care (Cooperative for American Remittances to Europe, 50 Broad Street, New York 4) reports that the price of the standard Care package has been reduced from $15 to $10. This food package was originally designed by the Quartermaster Corps of the U. S. Army. It provides 40,000 calories of fine highest quality American food that was designed to maintain adequately an American soldier under combat conditions for 10 days. One package can supplement present rations for one person for 50 days. Weighing 49 pounds in a waterproof container, it contains approximately 29 pounds of solid food already cooked and easily prepared and includes such additional items as can opener, soap, matches and other vitally needed supplies.

Says General Haskell, "We who work with Care are anxious that all Americans know how they may share the plenty of this country with suffering people abroad, especially at the Christmas season when gifts of food will go a long way to assure our neighbors overseas of our concern for them. We ask your help in spreading that message."

Work of the Interstate Sanitation Commission*

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THE Interstate Sanitation Commission is a tri-state agency of New York, New Jersey, and Connecticut, established in 1936, for the purpose of controlling future pollution and abating existing pollution in New York Harbor and the adjacent waters. Its jurisdiction, in general, covers New York Bay and that portion of the Hudson River up to Bear Mountain Bridge, Long Island Sound up to New Haven on the Connecticut shore and Port Jefferson on the northern shore of Long Island, and the ocean front from Sandy Hook, N. J., to Fire Island Inlet on the south shore of Long Island.

Let us inquire the reason for the creation of such a body as the Interstate Sanitation Commission. Going back to the early days of sanitation, one finds that the primary purpose was the collection of sewage and its disposal by burial or by dilution. With the advent of water carriage system by which the pollution was transmitted through pipes in water suspension, it was only natural that this material be carried by the shortest route to the nearest stream or body of water. It is not surprising therefore to find that up until the end of the 19th century, all of the municipalities in this area used the Hudson and East Rivers, New York Bay, Long Island Sound, and the Atlantic Ocean and the various tributaries for that purpose.

It is hardly conceivable that the engineer of those early days could have anticipated a growth of population so great that these enormous bodies of tidal waters would be unable to assimilate the load. The huge increase in population, not alone of New York City but of the adjacent municipalities in the Metropolitan area, soon placed a load on these waterways which gave evidence of taxing their capacity of assimilation, and at the turn of the century, this condition was well recognized. As far back as 1903, the New York State Legislature appointed the New York Bay Pollution Commission. Its report showed conclusively the immediate need of sewage treatment but, though the need was recognized, a quarter of a century passed before even the first steps of any consequence were taken to correct the situation. Although numerous reports were prepared, it was not until 1936 that this tri-state commission was formed.

This Commission is the first interstate agency charged with the actual duties of pollution abatement and clothed with authority to require municipalities and other entities to take steps to abate pollution. The laws establishing the Interstate Sanitation Commission fix the quality of the effluent which may be discharged by any sewage treatment works. It gives the Commission the right to conduct

* Presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association, New York, N. Y., December 13, 1945.

hearings, to investigate conditions, to determine if the creation of a temporary source of pollution would be in the best public interest, and to issue orders directing the discontinuance of pollution and prescribe specific progress that should be made at definite times prior to the final date fixed in such order. The Commission is given authority to bring action in the appropriate court to compel the enforcement of the provisions of the Tri-State Compact or of the orders of the Commission.

It may be seen therefore that it is no longer necessary to attempt to prove a menace to public health or a public nuisance, but instead the condition is judged on physical, chemical, and bacteriological standards.

In what manner does the Interstate Sanitation Commission function? There appear to be several fundamentals which, although not formally expressed, seem to have governed the course of the Commission from its beginning. The first has been to coöperate fully with the State Departments of Health and other state and local agencies, while the second has been to bend every effort toward accomplishing its objectives by persuasive means rather than relying on court action.

At first glance, one would think there is an overlapping of authority by this Commission and various state health departments, and the State Water Commission in Connecticut. This has not proved to be so. The State Health Departments proceed in their usual manner to bring about the construction of pollution abatement works, and where the state agencies do not have authority to require the abatement of pollution because of the difficulty of proving a public health menace or public nuisance, this Commission is in a position to lend its efforts toward this end. The Commission is also empowered to prescribe in its order certain specific progress that shall be made at definite times prior to the final date fixed in such order. This allows us to keep our hand directly on the pulse of the activity and should a municipality or other agency fail to make suitable progress, it is not necessary to wait until the date fixed for the completion of the plant has passed before action is taken.

Neither do the activities of the Commission and those of the State Health Department overlap in determining the character of treatment works to be constructed. Although the Compact establishes certain standards which must be met by the effluent from that plant, the approval of the plans for the plant is entirely in the hands of the State Department of Health which reviews the plans, keeping in mind that the plant shall be of such a nature or character that it will be able to produce an effluent to meet the Compact requirements. Should the Department of Health deem that a higher degree of treatment is desirable, it is entirely within their jurisdiction to require it. It is only when the plant is completed and in operation that this Commission assumes the authority to require that the plant effluent meet the Compact standards.

When the Tri-State Compact was drafted, it was recognized that a single standard should not be established for the entire district, but should be varied for discharges into waters used for different purposes. When waters are expected to be used for recreational purposes, shellfish culture, or the development of fish life, the pollution before being discharged into these waters must be so treated as to remove 60 per cent of the suspended solids, to reduce the coliform organisms to not more than 1 per ml. in 50 per cent of the samples, and to treat the polluting material so that the dissolved oxygen of the waters in the vicinity of the outfall shall not

be less than 50 per cent saturation during any week in the year.

When the pollution enters an area which is not expected to be used for the purposes above enumerated, that is to say, an industrial area, the standards are very much more lenient and require a removal of only 10 per cent of the suspended solids and a reduction in the oxygen demand so that dissolved oxygen in the vicinity of the outfall shall not be less than 30 per cent saturation during any week of the year.

It may be seen therefore that one purpose for creating the Commission was to coördinate and, if necessary, require the construction of sewage treatment works. It has a further purpose, and that is to see that the plants within the District operate in such a manner as to discharge an effluent which meets Compact standards. The means by which the Commission operates to carry out these two functions are briefly as follows:

Construction of Sewage Treatment Works

The Commission undertakes an educational campaign among the citizens and municipal authorities to make them cognizant of the need as well as advantages of pollution abatement and the construction of sewage treatment works. This is carried out by press releases and appearances before various service groups and the like. Conferences are held with municipal officials, and an attempt is made to discern the difficulties inherent in each individual problem. If necessary, hearings are ordered and an honest effort is made to determine how rapidly the municipality can undertake a pollution abatement program. Not infrequently the financial condition of a municipality is such as to make immedate construction of sewage treatment works a hardship. The Commission staff may review the financial status of the municipality and its bond redemption program. From such a financial study, it may be possible to fix a reasonable date at which the municipality can undertake a pollution abatement program.

It is usually possible to provide funds through sewer rentals, by issuing self-liquidating bonds even in excess of the statutory bond limitation. It has been the Commission's policy, however, to permit the municipality, wherever possible, to choose its own means of financing, providing vigorous effort is made to bring about pollution abatement at a reasonable date.

Following this, the Commission in the past has permitted municipalities to defer action from 5 to 8 years if a constructive program was established which would ultimately place a municipality in a financial position to undertake the cost of constructing the necessary works to abate pollution. After a hearing has been held to establish a program which can be met by the municipality and which is reasonably in line with the general program of advancement in the District, the Commission issues an order setting forth not only the time when pollution shall have been abated, but, likewise, intermediate steps such as the engagement of an engineer, and designating the date for the beginning of construction. By fixing these preliminary dates in the order, the Commission can at an early time determine if a municipality is proceeding with sufficient vigor to meet its ultimate goal. Should there be some delay in the preliminary dates, investigations are made, and, if warranted, an extension is granted. The Commission has not yet encountered a condition where an extension of time was not warranted; however should that occur, it is reasonable to assume that legal proceedings would be instituted to enforce the provisions of the order. I repeat—the Commission bends every effort toward obtaining the coöperative action on the

part of the municipality, and it sincerely hopes that it will not become necessary to institute legal action at any time.

In this connection, there is another phase of Commission activity which is of interest. The law provides that no new source of pollution shall be created in the Interstate Sanitation District unless the Commission shall find after due investigation and hearing that such new source of pollution is in the best public interest. As a result, a number of hearings have been held to determine if a new area about to be sewered or a sewer district desired by a municipality best serves the public interest. In each case where the Commission has found the construction of such sewers and sewers outlets to be in the best public interest, an order has been issued, so finding, but with provisions fixing the time when pollution abatement works shall be constructed.

Plant Operation

The second phase of the Commission's activities is concerned with the operation of sewage treatment works. This requires periodic inspections of the various plants during which half hourly samples of the influent and effluent are taken, and a morning and afternoon composite is made. Two basic tests determine compliance with Compact requirements: amount of suspended solids and number of coliform organisms. In addition, we observe the flow, the hydrogen ion concentration in the influent and effluent, and the residual chlorine. We also make determinations of settleable solids and biochemical oxygen demand.

Up to the present time, no effort has been made to make any routine tests of the dissolved oxygen in the vicinity of the outfall. During 1939, a very complete dissolved oxygen survey of all the waters of the Interstate Sanitation District was made, and when funds are available we hope to repeat this survey, thereby showing the trend throughout the Interstate Sanitation District. Dissolved oxygen in the vicinity of the outfall has been studied only in certain critical cases and where it seems that such information will be of special value in connection with the Commission's activities.

In closing, it might not be remiss to outline the manner in which an interstate agency of this character is created. Unfortunately, heretofore, pollution conditions had to become sufficiently aggravated to arouse public opinion to demand some organized program to accomplish the abatement of pollution. It is to be hoped that present experiences may make it possible to establish these programs before conditions become acute. However, let it be remembered when timing such action that even with the greatest coöperation on the part of all concerned, it is likely to take 5 years or more to bring about the accomplishment of an interstate compact.

In the case of the Interstate Sanitation Commission, the Legislatures of three states involved appointed a commission for the purpose of framing a suggested treaty and accompanying legislation. On such a legislative commission should be representatives of the state agencies involved in the program: namely, the state health departments and, as in Connecticut, the State Water Commission, as well as the agencies having to do with fish and shellfish propagation; members of the Legislature, preferably those who are members of the Legislative Committees on Interstate Coöperation; representatives of business and industry. The work of such a commission is not to be lightly considered. It requires a great deal of investigation and a broad administrative outlook in order to develop a satisfactory well rounded compact. Appropriations should be available to engage a staff to make such research as may

be necessary to supplement that which might be available through such state agencies as the department of health, etc. With such a background, the next step would be the actual adoption of the proposed measure by the various legislatures, if possible, with provision that the compact become operative before all of the proposed group have adopted it.

Interstate agreements for various purposes are not new. Many compacts, treaties, and agreements have been entered into between various states, having to do with many subjects, such as water supply, power, fisheries, fishing rights, crime and police powers, and innumerable others. The subject of pollution however, although an old problem in interstate waters, has only recently been the subject of formal joint action by the interested states.

The form of these interstate treaties or compacts follows two general lines:

The first, establishing a commission charged with certain responsibilities and authority to require the execution of its orders.

The second provides for a commission or other agency which after study and conference recommends action to be undertaken and executed by the various states or departments within the state.

Both forms have been used for about eight years and satisfactory progress has been made in pollution abatement under both methods. The Interstate Sanitation Commission falls under the first category.

Substantially all of the federal bills concerning pollution abatement that have been introduced in Congress recognize existing interstate compacts and encourage the formation of interstate commissions and agreements. The need for pollution abatement control is being more widely accepted as time goes on, and there is every reason to believe that pollution in interstate waters can be controlled and abated by the cooperative action of the several states involved, through interstate compacts or treaties.

In-Service Training in a Rural Health Department*

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ONE challenging duty of a health officer is to see that every staff member profits by his association with the department through mental stimulation, increased technical knowledge, maturation of judgment, and personality development. This task of overseeing the professional growth of an agency staff is one of the most neglected opportunities confronting the health administrator. How can this job best be done?

Occasional meetings, such as this,* occur too infrequently to be of real value in staff education. It is difficult to get an appreciable percentage of a rural agency staff to a meeting held two hundred miles away. Field visits to other agencies are expensive and impractical when attempted for an entire staff. Intensive field experience in other agencies is an impossibility without outside subsidy.[1] If money is available, such field experience is a long-term program which only benefits a small percentage of any agency staff during any given period.

Importing skilled instructors to conduct institutes is splendid procedure, but this occurs too infrequently in most rural agencies to be of lasting value. To meet the major need, a rural agency must develop an in-service training program which utilizes its own personnel and resources. The members of a rural health agency must train themselves.

What may be achieved by such in-service training?

The fundamental objectives of an in-service training program have been summarized by Dr. George T. Palmer[2]:

1. To make up for deficiencies in technical and scientific information required for the job generally.
2. To enlarge the outlook and understanding on the specific job.
3. To acquaint the staff with the fundamentals of personal and public relationships in order to encourage smoother functioning of the day-to-day job.
4. To keep the staff abreast of newer technical, procedural and administrative developments as derived from experience in other jurisdictions.

San Luis Obispo has attempted to meet these objectives by a locally conducted staff education program.

This department became interested in in-service training one year ago through dire necessity. At this time three vacancies existed on the sanitarian staff. There were no candidates for these positions who had any background in sanitation or public health work. As a result, the department was forced to hire three completely untrained men, ranging in age from 21 to 57 years. All three were high school graduates, eager to learn. A series of twelve intensive two hour sessions were given on the various aspects of environmental sanitation. Sessions occurred twice weekly and were attended by the health officer, assistant health officer, and chief sanitarian, in addition to the three trainees. The method of presentation was that a one hour formal lecture period, given by either the health officer or chief sanitarian, was followed by one hour of discussion and questions. Outside reading assignments were given and the trainees were required to submit papers once weekly on some aspect of the work dis-

* Presented before the Southern California Public Health Association at its Annual Meeting, March 22, 1946, in Pasadena, Calif.

cussed. These papers were then considered in class after being graded by the three amateur "professors."

It is interesting that there was frequent disagreement among the "professors" as to the grades, both relative and absolute, to be given the students. The subjects covered at the sessions included water purification, sewage disposal, milk handling, sanitation of eating establishments, rodent control, introduction to epidemiology, rabies, enteric diseases, the laboratory in relation to the sanitarian, housing, nuisances, public relations, etc. The classroom work was supplemented by field experience with the chief sanitarian to correlate the theoretical presentation of the classroom with the practical experience of the field. The net result of this course was that the department developed three sanitarians capable of carrying on their work with supervision.

The health department at this time was undergoing a considerable turnover in both trained and stenographic personnel. Each new replacement, as he or she was hired, was given an orientation session with the various departmental heads. This helped each new individual to understand his relationship to the overall functions of the health department.

Because of the turn-over in personnel, it seemed desirable to review and evaluate the activities of the local department with the entire staff. General staff meetings were held monthly for this purpose.

At all times, the staff was encouraged to regard every aspect of the local program critically. It was emphasized that all programs must be constantly reappraised to serve the public most efficiently. The venereal disease, tuberculosis, communicable disease, crippled children, school health, maternal and child health, sanitation, laboratory, vital statistics, nursing, and administrative programs of the health department were discussed by various members of the agency. The ensuing discussions, in which the entire staff participated, frequently brought to light obsolete practices. Many helpful suggestions were made.

Individual staff members were encouraged to review independently any activity in which they were interested. They were requested to discuss any suggestions they might have with the health officer. At first, only a few diffident suggestions were made. As the staff meetings continued, less and less shyness was noticed. More and more valuable ideas were brought to light.

One major advance resulting from the participation technique was that the entire staff agreed and pointed out to the health officer that a health educator was necessary for the county. The local tuberculosis association was ready to hire a full-time executive secretary. The health officer, as a board member of the tuberculosis association participating in the selection of the executive secretary, was able to set up health education experience and training as part of the job requirements. Thus, voluntary funds provided this important personnel for the county.

Another advance resulting from these staff conferences was that discussions of the school health program indicated the need of a coordinating committee made up of both school and health department personnel to revise school health practices. This culminated in the establishment of a permanent regular meeting committee whose activity has done much to improve the school health program.

Questions asked at staff meetings and at informal discussions in the department indicated a need and desire by the entire staff for discussion of various broad phases of public health. Accordingly, it was decided to have, as a feature of the monthly staff meetings for the present year, a discussion of some particular aspect of public health of general interest. A representative committee consisting of a staff nurse, a sanitarian, the health educator, and the health officer was selected to serve as program committee. The following is a partial list of the subjects selected for discussion:

1. Organized medical care
2. Community organization and health education techniques
3. The Gunn-Platt report on voluntary health agencies
4. Infant mortality
5. Restaurant sanitation
6. Organization and administration of health departments, including the Emerson report
7. Health practice indices; the use of the A.P.H.A. evaluation schedule
8. Brucellosis
9. Consideration of changing causes of death. New public health problems
10. Control of airborne diseases
11. Mental hygiene in the child health conference

Three people are selected for the presentation of each subject. Each discusses some aspect of the problem. Thereafter, the meeting is thrown open for general discussion. Interested members of the community are invited to attend. The program committee suggests the bibliography to the prospective speakers, but each speaker is encouraged to select supplementary material of his own.

Both professional and secretarial personnel participate. It is of interest that an outstanding presentation was made by our office manager on "A Medical Program for the Care of Migrant Farm Workers."

It must be recognized that effective learning depends upon the creation of a need in the individual being "educated." Often a need for information arises in relation to some particular current problem. This is the time to plan staff education along this line.

In-service staff meetings serve to increase intra-agency relationships and understanding. As a direct consequence, the department functions more smoothly.

It is possible to have this type of self-contained in-service program under the most adverse conditions. The major difficulty which has been encountered to date is in the lack of adequate library facilities and good reference material. This difficulty is not insurmountable.

The methods described here are an important adjunct to the other in-service training methods of refresher courses, field visits to other agencies, institutes, intensive field experience in demonstration agencies, and schooling on stipends.

Locally conducted in-service training in this agency has yielded benefits in program planning. It has served to stimulate members of this staff to seek further knowledge via other in-service training methods so that they may better serve in their present positions.

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Control of Gastric Cancer

December 5 and 6 are the date for a conference to consider new methods of attack on gastric cancer, to be held at Billings Hospital, University of Chicago. In making this announcement, Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, explained that arrangements for the meetings have been made by the Gastric Cancer Committee of the National Advisory Cancer Council.

This will be the third conference on gastric cancer to be sponsored by the Council. Dr. George M. Smith of Yale University is chairman of the Gastric Cancer Committee.

A Reverse Approach to the Fluorine-Dental Caries Hypothesis

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THE necessity for this study was brought about by repeated reports from Montrose, Colo., that the dental caries rate was extremely high, and that the city water supply contained 1.4 p.p.m. of fluorine. Our present-day knowledge has amply demonstrated that a high dental caries rate and 1.4 p.p.m. of fluorine in the water supply of any community do not exist together. Therefore, the situation in Montrose demanded investigation.

The principal source of the Montrose city water supply is Cimarron Creek, but during the summer it is augmented by water from the Gunnison River.

An examination of the high school pupils was made in January of 1945, the primary purpose being to ascertain the actual prevalence of dental caries among the students native to that community. A total of 406 high school pupils were examined, of which only 77 were found to be actually natives to the community proper. These 77 native individuals showed an average of 10 plus carious areas per person, and of these 77 individuals only one was found to be entirely free from dental caries. It was also found that the loss of teeth, because of dental caries in this group, was 0.818 per individual, which is almost one per person. The average age for this group was 15 years. It is important to note that no trace of dental fluorosis (mottled enamel) was found in the teeth of any of this group of Montrose natives. The purpose of this segregation was to relate the caries prevalence with a continuous use of the city water supply.

As the examination proceeded, however, other pupils were observed who presented typical examples of dental fluorosis, none of whom had been born or reared in the city of Montrose. These individuals came from various other communities in which fluorosed enamel was known to be endemic. There was a total of 67 such individuals. These 67 fluorosed individuals showed an average of only 1.7 carious areas per person, and of these 67, 27 were entirely free from dental caries. The loss of teeth in this group was found to average 0.179 per person. The dental condition of this group as regards dental caries is seen to be in startling contrast to that of the Montrose natives previously described.

Of particular interest was the fact that a considerable number of these fluorosed individuals had been born and reared in an agricultural district adjacent to Montrose known as Spring Creek Mesa. Invariably the Spring Creek Mesa pupils with dental fluorosis had been reared on water from deep wells. The significant observation is that the pupils raised in these two districts—Spring Creek Mesa and the city

of Montrose—only five to ten miles apart, present a totally different picture in regard to dental caries, which cannot be attributed to anything other than their water supply.

The only conclusion that could be reached from this study was that the report which gave the fluorine content of the city water as 1.4 p.p.m. fluorine was in error. This was established through a later analysis which revealed that the correct fluorine content was 0.3 p.p.m.

The usual direct approach in fluorine studies is that fluorine in a water supply at and above 1 p.p.m. is an indicator of a low caries rate—a rate that has been found to be consistently about three carious teeth per person in those native to and of continuous residence in a community using such a water supply. The reverse approach set forth in this present study is of particular interest in that, for the first time we believe, a high caries rate in a community has been used as an index of a low fluorine content in the public water supply.

A "low" fluorine content is defined in these studies as being a low fractional part of 1 p.p.m.

SUMMARY OF DENTAL SURVEY OF MONTROSE PUBLIC SCHOOL STUDENTS
MONTROSE SENIOR HIGH

Total Students Checked	406
Total natives examined	77
Total natives free from dental caries	1
Total fluorosed persons examined	67
Total fluorosed free from dental caries	27

Natives average 10.220 carious areas per person
Fluorosed average 1.776 carious areas per person
Natives average 0.818 extractions per person
Fluorosed average 0.179 extractions per person
No fluorosed enamel in any of the Montrose natives

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LABORATORY TESTS IN THE CONTROL OF MILK SUPPLIES

OUR Review Article for the present month deals with a technical problem which has been the subject of controversy for several years. The conflict of viewpoint in regard to methods of milk analysis has been disturbing to the health officer and in some degree has threatened the confidence which the public should have in its official health leadership. We therefore asked Dr. A. H. Robertson who is intimately familiar with the problem to give our readers a full and impartial survey of the issues involved.

Passing over administrative details in the enforcement of the milk control program, the major differences relate to the laboratory tests to be applied. The experts of the U. S. Public Health Service have championed a plan which has been embodied in a milk ordinance and code, adopted by more than a thousand communities in the United States and Canada. It governs the production of all milk in 15 states and, of pasteurized milk only, in 3 other states. The procedure recommended allows for the use of the Standard Plate Count, the Clump Microscopic Count, the Individual Microscopic Count, and the Methylene-Blue Reduction Test, as alternate laboratory criteria; for pasteurized milk, only the Agar Plate Count is recognized.

A system of milk control based on very different procedures has been established in Connecticut. Its laboratory makes no plate counts (except in special cases such as certified milk); but relies for bacterial counts on the direct microscopic methods and—in the case of pasteurized milk—routinely supplements the count by the phosphatase test and a special test for coliform organisms.

It is unnecessary here to repeat the highly technical evidence presented by Dr. Robertson in regard to these various procedures involved in what he calls "Plan A" and "Plan B." Incidentally, these designations are preferable to "the Federal plan" and "the Connecticut plan" since scientific problems should be settled on the basis of cold facts and not on grounds of the "amour-propre" associated with sponsorship. It may be noted, however, that a considerable body of evidence is cited in favor of the reliability of the microscopic test (except with

very low-count samples) and on the additional evidence it yields in regard to the types of bacteria and the presence of bovine body cells in certain diseased conditions. Furthermore, Robertson emphasizes the very special value of the phosphatase test which is demonstrated to be the most sensitive and accurate of all tests for estimating the success of pasteurizing processes; and he believes that the test for coliform organisms may be of significance in pasteurized milk.

Dr. Robertson's specific recommendations with regard to Plan B deal with legal and administrative problems which are of purely local interest to the State of Connecticut and involve no changes in laboratory procedure. With respect to Plan A, on the other hand, he makes three important recommendations with regard to testing technique; the routine testing of all samples of allegedly pasteurized milk by the use of the phosphatase test and the coliform test; the routine examination of all samples of pasteurized milk by the microscopic count; and use of the microscopic count for samples of raw milk from sources which fail to comply, especially when field inspectional methods fail to disclose the cause for high counts or short reduction times.

This is not a matter to be settled by any one expert, as Dr. Robertson would admit; but he has marshalled evidence which makes an impressive case against sole reliance on the laboratory tests included in Plan A. There is a clear challenge here to the experts in this field—and particularly to the experts of the U. S. Public Health Service—to seek some common ground of agreement which can harmonize or combine the values of both Plan A and Plan B. We would urge that the procedure employed by water bacteriologists in their field be applied in this related area. This procedure involves the setting up of coöperative studies in which workers in various laboratories employ several alternative standardized procedures and compare results, with regard to the significance of results obtained in the examination of a considerable series of actual field samples and the time involved in each procedure. In particular, the tests should be set up to include such questions as the following:

What are the relative values and economies involved in the use of Plate Counts and of Microscopic Counts as applied to milk of various bacterial contents?

What are the practical values of the Methylene-Blue Test as compared with Plate Counts or Microscopic Counts as an alternative method of measuring bacterial activity in milk?

What are the practical values of the Phosphatase Test—our only direct measure of the efficiency of pasteurization—and what additional burden would its use for routine testing of pasteurized milk impose upon our laboratories?

What is the practical value of the coliform test as a supplement to the phosphatase test in detecting recontamination of milk following pasteurization?

Only by such a coöperative study, in which advocates of both Plan A and Plan B participate, can the solution be found of a difference of opinion which may otherwise place serious obstacles in the way of an effective system of milk control.

THE STUDY OF ANTIBIOTICS AS A LESSON IN SCIENTIFIC METHODS

ONE of the most interesting problems in the philosophy of modern science is the relative function of individual investigation and of organized coöperative research. The accomplishments of the military establishments, the National

Research Council, and various governmental agencies show us how much may be accomplished along certain lines by large groups of investigators working on a coördinated plan with ample funds. It is probable that the interest of the federal government in this type of research will be continued and extended in the post-war period; but the single investigator or small group of investigators, working alone with the pure passion of scientific curiosity, have their even more vital rôle to play.

The discovery of antibiosis—the harmful influence exerted by one micro-organism through production of substances which are toxic to another micro-organism—dates back to a paper by Pasteur and Joubert in 1877. These investigators and many others, like Frost in the United States, visualized the possible application of this principle to the treatment of disease. The particular substance of this kind, which is now in the very forefront of medical advance—penicillin—was recognized by Fleming in 1929. Only in 1940 did Florey and his group at Oxford describe the actual therapeutic effect of this substance; and give us our first practical and important antibiotic. Only in 1943 did Waksman report the effects of another antibiotic, streptomycin. These pioneer discoveries were brilliant examples of the opening of new pathways of advance by the imagination of the individual investigator. Fleming and Florey well deserved the knighthoods which they had received and Waksman may rightly be proud of the fame which has made the name of a soil mycologist known to the physicians of the world.

The fact that penicillin had extraordinary power of destroying a wide variety of Gram-positive organisms was quickly established. Its application to the treatment of wounds helped materially to mitigate the horrors of war. In peace its use in the treatment of streptococcal and staphylococcal diseases, of syphilis and of gonorrhea has raised the highest hopes.

During the past year, however, these hopes have become somewhat less exuberant, with respect to its most important field of application, the treatment of syphilis. The best measure of efficacy of treatment in this disease is the relapse of the patient, after his apparent cure and without probable reinfection. The proportion of such relapses began to rise in a disturbing fashion. It was 25 to 50 per cent greater in a series of cases treated in the winter of 1944–1945 as compared with a similar series in the spring of 1944. The urgent question arose as to whether this disconcerting result was due to a change in the potency of the drug or to the development of resistant strains of Treponema.

Here was a problem which clearly called for another type of approach, analysis by a large number of investigators of a massive volume of cases by identical or comparable methods. A study of this type was therefore carried out under the stimulus of the Committee on Medical Research of the O.S.R.D. and—in its later stages—financed and directed by the U. S. Public Health Service. Forty-three clinics throughout the nation participated; and twenty-six different treatment schedules were employed.[1] The variables included the type of penicillin used, the dosage, the interval between treatment in hours (3–6) and the number of days for which treatment was continued (from 3.75 to 8.9 days).[2] The major result of this investigation was to demonstrate that the lessened efficiency of treatment which had been observed was due to changes in the composition of commercial penicillin. In 1945 it had been shown that "penicillin" included at least four different chemical compounds (G X F and K) distinguished by specific side-chains. Recent studies have shown that type G is highly potent and that type K is far less effective than the others, probably because it is more rapidly

destroyed in the body. It seems certain that the less satisfactory results obtained with recent penicillin therapy have been mainly due to the fact that commercial penicillins, provided since the middle of 1944, have contained a higher proportion of penicillin of type K. Hence, the immediate problem is the preparation of a penicillin with the least possible proportion of the K factor. This will not be an easy task but surely not one beyond the skill of the mycologist.

The studies of the committee yielded important data on many other details of treatment procedure including the use of other drugs in concert with penicillin. The primary criterium used in this study [3] was the development of symptoms within a period of 11 months after treatment. The cumulative failures after eleven months ranged from 15 per cent with 2,400,000 units of penicillin to 62 per cent with 600,000 units. The addition of 320 mg. of arsenoxide to 300,000 units of penicillin halved the relapse rate and gave the same result (21 per cent) as the use of 1,200,000 units of penicillin alone. The addition of bismuth (0.6–1.0 gm.) to penicillin over a four month period similarly halved the relapse rate. The report contains many other findings which will materially help in determining the optimum treatment procedure and in estimating its effectiveness.

In the case of streptomycin there is a somewhat similar story of the need for the complementary functions of the imaginative pioneer and the critically evaluating team. The antibiotic discovered by Waksman proved to be destructive for the Gram-negative organisms, just the ones missed by penicillin. Bacteremias and urinary infections due to this group of bacteria, meningitis due to *Hemophilus influenzae* and tularemia are among the diseases which can be treated with this material (although the typhoid and salmonella organisms seem less susceptible).[4] Here, however, the possibility of using streptomycin for the treatment of tuberculosis offers by far the greatest field of application. It is this possibility, as it was the possibility of treating syphilis with penicillin, that has raised the production of these antibiotics to the rank of a multi-million dollar industry in a period of some three years.

Streptomycin is by no means so dramatic in its effects on tuberculosis as is penicillin in its influence on syphilis. It is clear however that the new drug exerts a slow but distinct suppressive influence upon the development of tuberculous infection; and it seems certain that it will provide an essential part of our armamentarium for dealing with that disease. In this case, we shall need more light on the purity of the drug itself, on its introduction into the body so as to reach specific infected tissues and on the possible development of drug-resistant strains of the tubercle bacillus. In particular, the toxic effects of streptomycin which are related to renal function and neurological reactions must be evaluated. McDermott of Cornell University reported at the Connecticut Clinical Congress in September preliminary studies which indicate that the hazards involved are not serious. All of these problems call for intensive study by organized coöperative research programs.

It is probable that—in the future as in the past—the development of new and creative concepts which constitute milestones on the path of knowledge will come from investigators, working by themselves in the light of their individual scientific imaginations. For the working out of techniques of application and the quantitative evaluation of results, the mass method of coöperative research is clearly indicated. The theory of the atomic bomb was evolved by individuals; the bomb itself was prepared by teams. The scientific organization of the future should keep both pathways open.

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CAN THE CLERGY AID THE HEALTH OFFICER IN THE UPBUILDING OF MENTAL HEALTH?

WHEN Lemuel Shattuck published his *Report of the Sanitary Commission of Massachusetts* in 1850, he addressed his closing appeal for support first to physicians, and second to clergymen. What he desired was primarily an appeal from the pulpit in "one or more discourses annually" for a general program of sanitary reform. This type of support may still be of notable value to the health officer. The recognition that mental and emotional problems are as important as "physical" problems in the evaluation of public health needs, however, opens areas of far deeper and wider coöperation between the physician and the pastor.

The commonest single factor in emotional maladjustment is probably a sense of inadequacy and a feeling of fear which results in inner conflict. The clergyman, who has to deal with such conflicts in his daily work as pastor must understand something of the fundamental principles of psychiatry if he is to perform his task wisely. On the other hand, the wise psychiatrist realizes that the resolution of such conflicts frequently demands sublimation of motive and desire into positive constructive channels; and that—in the case of many individuals—such a result can be accomplished through what may be broadly termed religious experience. Mrs. John Sherman Hoyt, a leader in this field, has reminded us that the word "sublimate" means "to raise, to elevate, to make sublime."

It was the recognition of this community of interest which led to the establishment by the Federal Council of the Churches of Christ in America of a Commission on Religion and Health, with membership coming from the various Protestant Churches, and including ministers, physicians, psychiatrists, public health experts, nurses, and laymen. This Commission has worked in close relationship with the National Committee for Mental Hygiene, and has been at all points guided by the best available technical knowledge in this field. Its work is of vital significance to the public health profession.[1]

During the war, the Commission, with the coöperation of the Y.M.C.A., organized short courses on "First Aid in Mental Health" for Army chaplains, U.S.O. and Y.M.C.A. workers, and clergymen in indirect contact with the troops. A large proportion of all the Protestant chaplains in the Army and Navy were exposed to these courses and it should be a great asset to our civilian mental hygiene program to have these thousands of clergymen returning to their community duties with an understanding of the basic principles of mental hygiene.

A second stage of the work of the Commission was the preparation of a series of pamphlets dealing with the adjustment of the returned service man to the conditions of civilian life. One of these pamphlets[2] contains an article by Dr. J. A. P. Millet, an excellent popular analysis of the obvious signs which may indicate good or bad adjustment and of attitudes the counsellor should take (and should not take) in regard to them. Another[3] presents a helpful program for the local church in dealing with the emotional problems of the returned serviceman.

The Commission has published valuable lists of further references in the field of personal counselling which should be of substantial value to many public health workers as well as to the clergy.

The mental hygiene problems raised by war service are in no sense unique. They differ—in essence—only in degree from the similar problems of daily civilian life. There is not a community in which the public health worker and the pastor could not engage in mutually fruitful cultivation of this field. Every public health nurse and every social worker would benefit by reading a 24 page leaflet on "The Ministry of Listening" by the Rev. Russell H. Dicks which is among the Commission's publications.

We commend the work of the Commission on Religion and Health to our readers. We should like to see a few health officers, who have the surplus energy to lift their minds from daily routine, do something concrete to make medicine and the churches in their communities effective partners. We suspect that a conference of local pastors called by the health officer to discuss this problem with the counsel of a competent specialist in mental hygiene might bear rich and substantial fruits.

REFERENCES

1. Commission on Religion and Health of the Federal Council of Churches of Christ in America. Rev. Seward Hiltner, Executive Secretary, 297 Fourth Ave., New York 10, N. Y. List of publications available free.
2. The Church and Returning Service Personnel. No. 3. "Counseling to Meet the Needs," by John A. P. Millet, M.D.
3. The Church and Returning Service Personnel. No. 6. "The Program of the Local Church."

A.P.H.A. MEMBERSHIP DIRECTORY

The 1946 Membership Directory of the Association is at last a reality and every member is entitled to receive it without charge. Members who desire to receive a copy should send a post card or a letter to this effect to the Association office at 1790 Broadway, New York 19, N. Y.

CONSTITUTION OF THE WORLD HEALTH ORGANIZATION

THE STATES parties to this Constitution declare, in conformity with the Charter of the United Nations, that the following principles are basic to the happiness, harmonious relations and security of all peoples:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.

The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest coöperation of individuals and States.

The achievement of any State in the promotion and protection of health is of value to all.

Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger.

Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.

The extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest attainment of health.

Informed opinion and active coöperation on the part of the public are of the utmost importance in the improvement of the health of the people.

Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.

ACCEPTING THESE PRINCIPLES, and for the purpose of coöperation among themselves and with others to promote and protect the health of all peoples, THE CONTRACTING PARTIES agree to the present Constitution and hereby establish the World Health Organization as a specialized agency of the United Nations within the terms of Article 57 of the Charter of the UN.

CHAPTER I

OBJECTIVE

Article 1

The objective of the World Health Organization (hereinafter called the Organization) shall be the attainment by all peoples of the highest possible level of health.

CHAPTER II

FUNCTIONS

Article 2

In order to achieve its objective, the functions of the Organization shall be:

(a) to act as the directing and coördinating authority on international health work;

(b) to establish and maintain effective collaboration with the United Nations, specialized agencies, governmental health administrations, professional groups and such other organizations as may be deemed appropriate;

(c) to assist governments, upon request, in strengthening health services;

(d) to furnish appropriate technical assistance and, in emergencies, necessary aid upon the request or acceptance of governments;

(e) to provide or assist in providing, upon the request of the United Nations, health services and facilities to special groups, such as the peoples of trust territories;

(f) to establish and maintain such administrative and technical services as may be required, including epidemiological and statistical services;

(g) to stimulate and advance work to eradicate epidemic, endemic and other diseases;

(h) to promote, in coöperation with other specialized agencies where necessary, the prevention of accidental injuries;

(i) to promote, in coöperation with other specialized agencies where necessary, the improvement of nutrition, housing, sanitation, recreation, economic or working conditions and other aspects of environmental hygiene;

(j) to promote coöperation among scientific and professional groups which contribute to the advancement of health;

(k) to propose conventions, agreements and regulations, and make recommendations with respect to international health matters and to perform such duties as may be assigned thereby to the Organization and are consistent with its objective;

(l) to promote maternal and child health and welfare and to foster the ability to live harmoniously in a changing total environment;

(m) to foster activities in the field of mental health, especially those affecting the harmony of human relations;
(n) to promote and conduct research in the field of health;
(o) to promote improved standards of teaching and training in the health, medical and related professions;
(p) to study and report on, in coöperation with other specialized agencies where necessary, administrative and social techniques affecting public health and medical care from preventive and curative points of view, including hospital services and social security;
(q) to provide information, counsel and assistance in the field of health;
(r) to assist in developing an informed public opinion among all peoples on matters of health;
(s) to establish and revise as necessary international nomenclatures of diseases, of causes of death and of public health practices;
(t) to standardize diagnostic procedures as necessary;
(u) to develop, establish and promote international standards with respect to food, biological, pharmaceutical and similar products;
(v) generally to take all necessary action to attain the objective of the Organization.

CHAPTER III

MEMBERSHIP AND ASSOCIATE MEMBERSHIP

Article 3

Membership in the Organization shall be open to all States.

Article 4

Members of the United Nations may become Members of the Organization by signing or otherwise accepting this Constitution in accordance with the provisions of Chapter XIX and in accordance with their constitutional processes.

Article 5

The States whose governments have been invited to send observers to the International Health Conference held in New York, 1946, may become Members by signing or otherwise accepting this Constitution in accordance with the provisions of Chapter XIX and in accordance with their constitutional processes provided that such signature or acceptance shall be completed before the first session of the Health Assembly.

Article 6

Subject to the conditions of any agreement between the United Nations and the Organization, approved pursuant to Chapter XVI, States which do not become Members in accordance with Articles 4 and 5 may apply to become Members and shall be admitted as Members when their application has been approved by a simple majority vote of the Health Assembly.

Article 7

If a Member fails to meet its financial obligations to the Organization or in other exceptional circumstances the Health Assembly may, on such conditions as it thinks proper, suspend the voting privileges and services to which a Member is entitled. The Health Assembly shall have the authority to restore such voting privileges and services.

Article 8

Territories or groups of territories which are not responsible for the conduct of their international relations may be admitted as Associate Members by the Health Assembly upon application made on behalf of such territory or group of territories by the Member or other authority having responsibility for their international relations. Representatives of Associate Members to the Health Assembly should be qualified by their technical competence in the field of health and should be chosen from the native population. The nature and extent of the rights and obligations of Associate Members shall be determined by the Health Assembly.

CHAPTER IV

ORGANS

Article 9

The work of the organization shall be carried out by:
(a) The World Health Assembly (herein called the Health Assembly);
(b) The Executive Board (hereinafter called the Board);
(c) The Secretariat.

CHAPTER V

THE WORLD HEALTH ASSEMBLY

Article 10

The Health Assembly shall be composed of delegates representing Members.

Article 11

Each Member shall be represented by not more than three delegates, one of whom shall

be designated by the Member as chief delegate. These delegates should be chosen from among persons most qualified by their technical competence in the field of health, preferably representing the national health administration of the Member.

Article 12

Alternates and advisers may accompany delegates.

Article 13

The Health Assembly shall meet in regular annual session and in such special sessions as may be necessary. Special sessions shall be convened at the request of the Board or of a majority of the Members.

Article 14

The Health Assembly, at each annual session, shall select the country or region in which the next annual session shall be held, the Board subsequently fixing the place. The Board shall determine the place where a special session shall be held.

Article 15

The Board, after consultation with the Secretary-General of the United Nations, shall determine the date of each annual and special session.

Article 16

The Health Assembly shall elect its President and other officers at the beginning of each annual session. They shall hold office until their successors are elected.

Article 17

The Health Assembly shall adopt its own rules of procedure.

Article 18

The functions of the Health Assembly shall be:

(a) to determine the policies of the Organization;
(b) to name the Members entitled to designate a person to serve on the Board;
(c) to appoint the Director-General;
(d) to review and approve reports and activities of the Board and of the Director-General and to instruct the Board in regard to matters upon which action, study, investigation or report may be considered desirable;
(e) to establish such committees as may be considered necessary for the work of the Organization;
(f) to supervise the financial policies of the Organization and to review and approve the budget;
(g) to instruct the Board and the Director-General to bring to the attention of Members and of international organizations, governmental or non-governmental, any matter with regard to health which the Health Assembly may consider appropriate;
(h) to invite any organization, international or national, governmental or non-governmental, which has responsibilities related to those of the Organization, to appoint representatives to participate, without right of vote, in its meetings or in those of the committees and conferences convened under its authority, on conditions prescribed by the Health Assembly; but in the case of national organizations, invitations shall be issued only with the consent of the government concerned;
(i) to consider recommendations bearing on health made by the General Assembly, the Economic and Social Council, the Security Council or Trusteeship Council of the United Nations, and to report to them on the steps taken by the Organization to give effect to such recommendations;
(j) to report to the Economic and Social Council in accordance with any agreement between the Organization and the United Nations;
(k) to promote and conduct research in the field of health by the personnel of the Organization, by the establishment of its own institutions or by coöperation with official or non-official institutions of any Member with the consent of its government;
(l) to establish such other institutions as it may consider desirable;
(m) to take any other appropriate action to further the objective of the Organization.

Article 19

The Health Assembly shall have authority to adopt conventions or agreements with respect to any matter within the competence of the Organization. A two-thirds vote of the Health Assembly shall be required for the adoption of such conventions or agreements which shall come into force for each Member when accepted by it in accordance with its constitutional processes.

Article 20

Each Member undertakes that it will, within eighteen months after the adoption by

the Health Assembly of a convention or agreement, take action relative to the acceptance of such convention or agreement. Each Member shall notify the Director-General of the action taken and if it does not accept such convention or agreement within the time limit, it will furnish a statement of the reasons for non-acceptance. In case of acceptance, each Member agrees to make an annual report to the Director-General in accordance with Chapter XIV.

Article 21

The Health Assembly shall have authority to adopt regulations concerning:

(a) sanitary and quarantine requirements and other procedures designed to prevent the international spread of disease;
(b) nomenclatures with respect to diseases, causes of death and public health practices;
(c) standards with respect to diagnostic procedures for international use;
(d) standards with respect to the safety, purity and potency of biological, pharmaceutical and similar products moving in international commerce;
(e) advertising and labelling of biological, pharmaceutical and similar products moving in international commerce.

Article 22

Such Regulations adopted pursuant to Article 21 shall come into force for all Members after due notice has been given of their adoption by the Health Assembly except for such Members as may notify the Director-General of rejection or reservations within the period stated in the notice.

Article 23

The Health Assembly shall have authority to make recommendations to Members with respect to any matter within the competence of the Organization.

CHAPTER VI

THE EXECUTIVE BOARD

Article 24

The Board shall consist of eighteen persons designated by as many Members. The Health Assembly, taking into account an equitable geographical distribution, shall elect the Members entitled to designate a person to serve on the Board. Each of these Members should appoint to the Board a person technically qualified in the field of health, who may be accompanied by alternates and advisers.

Article 25

The Members shall be elected for three years and may be re-elected; provided that of the Members elected at the first session of the Health Assembly, the terms of six Members shall be for one year and the terms of six Members shall be for two years, as determined by lot.

Article 26

The Board shall meet at least twice a year and shall determine the place of each meeting.

Article 27

The Board shall elect its Chairman from among its members and shall adopt its rules of procedure.

Article 28

The functions of the Board shall be:

(a) to give effect to the decisions and policies of the Health Assembly;
(b) to act as the executive organ of the Health Assembly;
(c) to perform any other functions entrusted to it by the Health Assembly;
(d) to advise the Health Assembly on questions referred to it by that body and on matters assigned to the Organization by conventions, agreements and regulations;
(e) to submit advice or proposals to the Health Assembly on its own initiative;
(f) to prepare the agenda of meetings of the Health Assembly;
(g) to submit to the Health Assembly for consideration and approval a general programme of work covering a specific period;
(h) to study all questions within its competence;
(i) to take emergency measures within the functions and financial resources of the Organization to deal with events requiring immediate action. In particular it may authorize the Director-General to take the necessary steps to combat epidemics, to participate in the organization of health relief to victims of a calamity and to undertake studies and research the urgency of which has been drawn to the attention of the Board by any Member or by the Director-General.

Article 29

The Board shall exercise on behalf of the whole Health Assembly the powers delegated to it by that body.

CHAPTER VII

THE SECRETARIAT

Article 30

The Secretariat shall comprise the Director-General and such technical and administrative staff as the Organization may require.

Article 31

The Director-General shall be appointed by the Health Assembly on the nomination of the Board on such terms as the Health Assembly may determine. The Director-General, subject to the authority of the Board, shall be the chief technical and administrative officer of the Organization.

Article 32

The Director-General shall be ex-officio Secretary of the Health Assembly, of the Board, of all commissions and committees of the Organization and of conferences convened by it. He may delegate these functions.

Article 33

The Director-General or his representative may establish a procedure by agreement with Members, permitting him, for the purpose of discharging his duties, to have direct access to their various departments, especially to their health administrations and to national health organizations, governmental or non-governmental. He may also establish direct relations with international organizations whose activities come within the competence of the Organization. He shall keep Regional Offices informed on all matters involving their respective areas.

Article 34

The Director-General shall prepare and submit annually to the Board the financial statements and budget estimates of the Organization.

Article 35

The Director-General shall appoint the staff of the Secretariat in accordance with staff regulations established by the Health Assembly. The paramount consideration in the employment of the staff shall be to assure that the efficiency, integrity and internationally representative character of the Secretariat shall be maintained at the highest level. Due regard shall be paid also to the importance of recruiting the staff on as wide a geographical basis as possible.

Article 36

The conditions of service of the staff of the Organization shall conform as far as possible with those of other United Nations organizations.

Article 37

In the performance of their duties the Director-General and the staff shall not seek or receive instructions from any government or from any authority external to the Organization. They shall refrain from any action which might reflect on their position as international officers. Each Member of the Organization on its part undertakes to respect the exclusively international character of the Director-General and the staff and not to seek to influence them.

CHAPTER VIII

COMMITTEES

Article 38

The Board shall establish such committees as the Health Assembly may direct and, on its own initiative or on the proposal of the Director-General, may establish any other committees considered desirable to serve any purpose within the competence of the Organization.

Article 39

The Board, from time to time and in any event annually, shall review the necessity for continuing each committee.

Article 40

The Board may provide for the creation of or the participation by the Organization in joint or mixed committees with other organizations and for the representation of the Organization in committees established by such other organizations.

CHAPTER IX

CONFERENCES

Article 41

The Health Assembly or the Board may convene local, general, technical or other special conferences to consider any matter within the competence of the Organization and may provide for the representation at such conferences of international organizations and, with the consent of the government concerned, of national organizations, governmental or non-governmental. The manner of such representation shall be determined by the Health Assembly or the Board.

Article 42

The Board may provide for representation of the Organization at conferences in which the Board considers that the Organization has an interest.

CHAPTER X

HEADQUARTERS

Article 43

The location of the headquarters of the Organization shall be determined by the Health Assembly after consultation with the United Nations.

CHAPTER XI

REGIONAL ARRANGEMENTS

Article 44

(a) The Health Assembly shall from time to time define the geographical areas in which it is desirable to establish a regional organization.

(b) The Health Assembly may, with the consent of a majority of the Members situated within each area so defined, establish a regional organization to meet the special needs of such area. There shall not be more than one regional organization in each region.

Article 45

Each regional organization shall be an integral part of the Organization in accordance with this Constitution.

Article 46

Each regional organization shall consist of a Regional Committee and a Regional Office.

Article 47

Regional Committees shall be composed of representatives of the Member States and Associate Members in the region concerned. Territories or groups of territories within the region, which are not responsible for the conduct of their international relations and which are not Associate Members, shall have the right to be represented and to participate in Regional Committees. The nature and extent of the rights and obligations of these territories or groups of territories in Regional Committees shall be determined by the Health Assembly in consultation with the Member or other authority having responsibility for the international relations of these territories and with the Member States in the region.

Article 48

Regional Committees shall meet as often as necessary and shall determine the place of each meeting.

Article 49

Regional Committees shall adopt their own rules of procedure.

Article 50

The functions of the Regional Committee shall be:

(a) to formulate policies governing matters of an exclusively regional character;

(b) to supervise the activities of the Regional Office;

(c) to suggest to the Regional office the calling of technical conferences and such additional work or investigation in health matters as in the opinion of the Regional Committee would promote the objective of the Organization within the area.

(d) to coöperate with the respective regional committees of the United Nations and with those of other specialized agencies and with other regional international organizations having interests in common with the organization;

(e) to tender advice, through the Director-General, to the Organization on international health matters which have wider than regional significance;

(f) to recommend additional regional appropriations by the governments of the respective regions if the proportion of the central budget of the Organization allotted to that region is insufficient for the carrying out of the regional functions;

(g) such other functions as may be delegated to the Regional Committee by the Health Assembly, the Board or the Director-General.

Article 51

Subject to the general authority of the Director-General of the Organization, the Regional Office shall be the administrative organ of the Regional Committee. It shall, in addition, carry out within the region, the decisions of the Health Assembly and of the Board.

Article 52

The head of the Regional Office shall be the Regional Director appointed by the Board in agreement with the Regional Committee.

Article 53

The staff of the Regional Office shall be appointed in a manner to be determined by agreement between the Director-General and the Regional Director.

Article 54

The Pan-American sanitary organization represented by the Pan-American Sanitary Bureau and the Pan-American Sanitary Conferences, and all other inter-governmental regional health organizations in existence prior

to the date of signature of this Constitution, shall in due course be integrated with the Organization. This integration shall be effected as soon as practicable through common action based on mutual consent of the competent authorities expressed through the organizations concerned.

CHAPTER XII

BUDGETS AND EXPENSES

Article 55

The Director-General shall prepare and submit to the Board the annual budget estimates of the Organization. The Board shall consider and submit to the Health Assembly such budget estimates, together with any recommendations the Board may deem advisable.

Article 56

Subject to any agreement between the Organization and the United Nations, the Health Assembly shall review and approve the budget estimates and shall apportion the expenses among the Members in accordance with a scale to be fixed by the Health Assembly.

Article 57

The Health Assembly or the Board acting on behalf of the Health Assembly may accept and administer gifts and bequests made to the Organization provided that the conditions attached to such gifts or bequests are acceptable to the Health Assembly or the Board and are consistent with the objective and policies of the Organization.

Article 58

A special fund to be used at the discretion of the Board shall be established to meet emergencies and unforeseen contingencies.

CHAPTER XIII

VOTING

Article 59

Each Member shall have one vote in the Health Assembly.

Article 60

(a) Decisions of the Health Assembly on important questions shall be made by a two-thirds majority of the Members present and voting. These questions shall include: the adoption of conventions or agreements the approval of agreements bringing the Organization into relation with the United Nations and inter-governmental organizations and agencies in accordance with Articles 69, 70, and 72; amendments to this Constitution.

(b) Decisions on other questions, including the determination of additional categories of questions to be decided by a two-thirds majority, shall be made by a majority of the Members present and voting.

(c) Voting on analogous matters in the Board and in committees of the Organization shall be made in accordance with paragraphs (a) and (b) of this Article.

ARTICLE XIV

REPORTS SUBMITTED BY STATES

Article 61

Each Member shall report annually to the Organization on the action taken and progress achieved in improving the health of its people.

Article 62

Each Member shall report annually on the action taken with respect to recommendations made by it by the Organization and with respect to conventions, agreements and regulations.

Article 63

Each Member shall communicate promptly to the Organization important laws, regulations, official reports and statistics pertaining to health which have been published in the State concerned.

Article 64

Each Member shall provide statistical and epidemiological reports in a manner to be determined by the Health Assembly.

Article 65

Each Member shall transmit upon the request of the Board such additional information pertaining to health as may be practicable.

CHAPTER XV

LEGAL CAPACITIES, PRIVILEGES AND IMMUNITIES

Article 66

The Organization shall enjoy in the territory of each Member such legal capacity as may be necessary for the fulfilment of its objective and for the exercise of its functions.

Article 67

(a) The Organization shall enjoy in the territory of each Member such privileges and immunities as may be necessary for the fulfilment of its objective and for the exercise of its functions.

(b) Representatives of Members, persons designated to serve on the Board and technical and administrative personnel of the Organization shall similarly enjoy such privileges and immunities as are necessary for the independent exercise of their functions in connection with the Organization.

Article 68

Such legal capacity, privileges and immunities shall be defined in a separate agreement to be prepared by the Organization in consultation with the Secretary-General of the United Nations and concluded between the Members.

CHAPTER XVI

RELATIONS WITH OTHER ORGANIZATIONS

Article 69

The Organization shall be brought into relation with the United Nations as one of the specialized agencies referred to in Article 57 of the Charter of the United Nations. The agreement or agreements bringing the Organization into relation with the United Nations shall be subject to approval by a two-thirds vote of the Health Assembly.

Article 70

The Organization shall establish effective relations and coöperate closely with such other intergovernmental organizations as may be desirable. Any formal agreement entered into with such organizations shall be subject to approval by a two-thirds vote of the Health Assembly.

Article 71

The Organization may, on matters within its competence, make suitable arrangements for consultation and coöperation with non-governmental international organizations and, with the consent of the government concerned, with national organizations, governmental or non-governmental.

Article 72

Subject to the approval by a two-thirds vote of the Health Assembly, the Organization may take over from any other international organization or agency whose purpose and activities lie within the field of competence of the Organization such functions, resources and obligations as may be conferred upon the Organization by international agreement or by mutually acceptable arrangements entered into between the competent authorities of the respective organizations.

CHAPTER XVII

AMENDMENTS

Article 73

Texts of proposed amendments to this Constitution shall be communicated by the Director-General to Members at least six months in advance of their consideration by the Health Assembly. Amendments shall come into force for all Members when adopted by a two-thirds vote of the Health Assembly and accepted by two-thirds of the Members in accordance with their respective constitutional processes.

CHAPTER XVIII

INTERPRETATION

Article 74

The Chinese, English, French, Russian and Spanish texts of this Constitution shall be regarded as equally authentic.

Article 75

Any question or dispute concerning the interpretation or application of this Constitution which is not settled by negotiation or by the Health Assembly shall be referred to the International Court of Justice in conformity with the Statute of the Court, unless the parties concerned agree on another mode of settlement.

Article 76

Upon authorization by the General Assembly of the United Nations or upon authorization in accordance with any agreement between the Organization and the United Nations, the Organization may request the International Court of Justice for an advisory opinion on any legal question arising within the competence of the Organization.

Article 77

The Director-General may appear before the Court on behalf of the Organization in connection with any proceedings arising out of any such request for an advisory opinion. He shall make arrangements for the presentation of the case before the Court including arrangements for the argument of different views on the question.

CHAPTER XIX

ENTRY INTO FORCE

Article 78

Subject to the provisions of Chapter III, this Constitution shall remain open to all States for signature or acceptance.

Article 79

(a) States may become parties to this Constitution by
  (i) signature without reservation as to approval;
  (ii) signature subject to approval followed by acceptance; or
  (iii) acceptance.
(b) Acceptance shall be affected by the deposit of a formal instrument with the Secretary-General of the United Nations.

Article 80

This Constitution shall come into force when twenty-six Members of the United Nations have become parties to it in accordance with the provisions of Article 79.

Article 81

In accordance with Article 102 of the Charter of the United Nations, the Secretary-General of the United Nations will register this Constitution when it has been signed without reservation as to approval on behalf of one State or upon deposit of the first instrument of acceptance.

Article 82

The Secretary-General of the United Nations will inform States parties to this Constitution of the date when it has come into force. He will also inform them of the dates when other States have become parties to this Constitution.

IN FAITH WHEREOF the undersigned representatives having been duly authorized for that purpose, sign this Constitution.

Done in the City of New York this twenty-second day of July, 1946, in a single copy in the Chinese, English, French, Russian and Spanish languages, each text being equally authentic. The original texts shall be deposited in the archives of the United Nations. The Secretary-General of the United Nations will send certified copies to each of the Governments represented at the Conference.

Credit Lines

UNRRA LOCATES KIDNAPPED CHILDREN

"The UNRRA headquarters at Arolsen, Germany, announced on June 2 that UNRRA had found 10,000 children kidnapped by Nazi "Pied Pipers" from countries overrun by the German war machine and carried off to Germany.

"In January, 1946, the first UNRRA child-search team went to work in the Regensburg area, an area rich in rumors and clues. By March this three-man team had located nearly 1,000 children, and the importance of child searching had been established. Today six teams are in the field, operating in the American, British, and French Zones, each having up to 15 members and speaking as many as 27 languages."

Thus, the July, 1946, *Monthly UNRRA Review* (1344 Connecticut Avenue, Washington 25, D. C.) begins its thrilling story of the restoration of thousands of kidnapped (literally) European children to their countries and, if possible, their homes.

This *Monthly Review* is a veritable storehouse of information on what the worlds across the two oceans are like and all the diverse activities that are a part of healing the most critical wounds of the six year 2nd World War. Its August issue is a two year review of the work of UNRRA, included in which is a country-by-country report of the work of the Health Division.

If you can stand more about the child's world of today over a large segment of the earth, get the July *The Child*, of the U. S. Children's Bureau (Washington 25, D. C.). Devoted to Europe's displaced children, this issue sketches the manifold endeavors that are going into the reconstruction of child life in Europe. Perhaps you will have the grace to blush as you read what other countries are doing—Switzerland, for example, which is feeding the numerical counterpart of its own child population, 1,000,000, for a 6 week period with food exported from Switzerland. In addition 80,000 children from the countries of Europe have been invited for 3 month stays in Swiss families since the end of hostilities in 1945. But read all of it for yourself.

DIGEST OF DDT LITERATURE

The Department of Agriculture is continuing its digest of the literature on DDT. A second digest, covering the period May 1 to December 31, 1944, became available in May. This digest is a valuable addition to the recent article and editorial, "Present Position of DDT in the Control of Insects of Medical Importance," by Fred C. Bishopp, Ph.D., and "Taking Stock of DDT" respectively, appearing in the June, 1946, issue of the *A.J.P.H.* Available from the Division of Insecticide Investigations, Bureau of Entomology and Plant Quarantine, Department of Agriculture, Washington, D. C.

MARGARINE VS. BUTTER

In view of butter's current antics on the aerial trapeze, the butter colored pamphlet *Science, Margarine, Nutrition* has unusual timeliness. Prepared by Lawrence C. Salter and Associates, Consultants for Science (Munsey Building, Washington 4) it summarizes what nutritionists have long been teaching—that margarine has no nutritional disadvantage in relation to butter and further that it may actually be a better table fat than butter. The pamphlet includes a good brief bibliography.

There is also an analysis of the restrictive laws and taxes on the sale of margarine—restrictions that it suggests need reëxamination in the light of current knowledge and current food problems.

ATOMIC BOMBS—AN AID TO PUBLIC HEALTH

"New horizons of medical and biological research were opened when the Manhattan Engineering District, key organization in the development of the atomic bomb, delivered the first radioactive isotopes to the nation's research institutions,"—so comments the writer of *News Notes*, Office of The Surgeon General, U. S. Army, in the August 15, 1946, release.

Barnard Free Skin and Cancer Hospital of St. Louis received the first unit—a millicurie for study of the processes by which cancer is produced. The total cost to the hospital was about $400.

Requests for radio elements thus far received cover wide fields of scientific interest. Included in the list are:

1. Mechanisms by which cancer is produced.
2. Mechanisms by which plants utilize sunlight and carbon dioxide.
3. Disfunction of the thyroid glands.
4. Growth and composition of teeth and bones.
5. Utilization of sugar in diabetes.
6. Utilization of all essential food components.
7. The turnover of iron in anemic conditions.
8. Absorption by plants of essential elements from soil.
9. Vulcanization and polymerization of rubber.
10. Problems associated with radioactive isotopes themselves.

GUIDE TO FOOD SERVICE

John Andrews, Sanitary Engineer (R), Division of Sanitary Engineering, and Frances T. Champion, Division of Public Health Methods, both of the Office of The Surgeon General, U. S. Public Health Service, are to be congratulated for their *Guide to Safe Food Service*. This tentative edition was published in February, 1946. It contains just about all the information anyone contemplating a program of training for employees in food establishments might desire.

Not only is the preliminary "attack" given in a way of a discussion of individuals who should attend the courses, place for the courses, numbers to attend, records, stimulating human interest, but, in addition, programs for three sessions are provided. For each session quizzes have been prepared—two for the first session—four for the second session, and two for the third session.

Reference pages at the end of the manual should also be of great value.

PUBLIC HEALTH CAN BE MEASURED IN DOLLARS AND CENTS

"Chicago and Northern Illinois—A *Healthful* Place to Live," is the heading of an advertisement that covered more than a third of a page in the *New York Times* of September 2, 1946. "The notable contributions by the Chicago Board of Health, and those of the outlying communities, have attracted nation-wide attention," is a lead line. An infant death rate for 1945 of 29.6 per 1,000 live births, and a maternal death rate of 1.6 per 1,000 births in 1944 and 1945 are cited. Attention is called to the diphtheria control program and the low typhoid fever incidence and death rate. A safe and plentiful water supply and a "vast, modern" sewage disposal system are also presented as selling points.

The advertiser? Not the Health Department but the Territorial Information Department and the Commonwealth Edison Company, Western United Gas and Electric Company, Public Service Company of Northern

Illinois, and the Illinois Northern Utilities Company.

REPORT FROM SEATTLE—AND FROM ILLINOIS

For ten years Seattle's Ryther Child Center has been developing a service for emotionally disturbed children. This service grew out of the needs and from the resources at hand. It is being reported on in a series of Monographs made possible by a four year grant of $50,000 by the Field Foundation, for training, research, and educational service. They are in response to a wide variety of questions about the service and its operation.

The second Monograph on Organization and Operation was released in June, 1946, an earlier one on the Historial Development of the Ryther Child Center having appeared in 1945. Other Monographs on Psychiatric Consultation in a Treatment Service, The Use of Authority in Therapeutic Practice, Building Structures for Treatment Institutions, and Histories of Individual Children are in prospect. Lillian J. Johnson is the Center's Executive Secretary, its address is 4416 Stoneway, Seattle 3.

Continuing the same subject, *Plans for an Institution for the Treatment of Emotionally Disturbed Children* has just been released by the Illinois Children's Home and Aid Society (Chicago). This sets up in terms of intake policy, treatment program, personnel, teaching and research, plant, location, budget and salary schedule, the plan of this organization for a treatment institution. The plan was developed after a survey of 8 existing institutions, among them the Ryther Child Center, under the leadership of a special planning committee. In addition to the study, a comprehensive bibliography on the subject has been prepared which will be separately published under the title, "Treatment of the Emotionally Disturbed Child: A Selected Bibliography with Annotations." The study and the plan were made possible by a grant from the Field Foundation.

HEALTH EDUCATION — MANY FACETS IN ILLINOIS

The Illinois Department of Public Health (Springfield, Ill.) sends us a quartette of health education materials that show both immediate and long-range interests. *Happy Eating for Babies* in word and picture tells all about "the right food the right way the right time." It is especially suitable for the mother of a first baby. *Home Care of Communicable Diseases* and *Common Transmissible Skin Diseases of Children* continue the education of the parent.

But *What Does the Medical Profession Think about County Health Departments?* is the plum in the pudding. Prepared by the Illinois Statewide Public Health Committee, its four pages summarize the 1942 resolutions of the American Medical Association and subsequent editorial in its *Journal* in behalf of extending the services of local health departments throughout the United States. The approval by the Illinois Medical Society of the Searcy-Clabaugh Act (Illinois' permissive health unit law) is also summarized. This is a recognition that the success of public health endeavors depends in part upon the administrative framework within which they operate. It also forestalls the careless propagandist who says "Oh, but the doctors are against county health departments."

ON THE ROAD TO SAFE MILK

A Short Chapter in the important history of milk sanitation traces the history of the development of milk bottle caps and closures.

Beginning with the itinerant milkman who used to roam the city streets with a cart filled with 40 quart buckets

to the present-day type of protection offered by a cap and closure, the story is told with an appeal both to the mechanical gadget and the antiquarian minded. Should be of particular interest to school health educators.

Prepared by and available from one of the Association's 36 sustaining members, Sealright Co., Inc., Fulton, N. Y.

A NEW DRESS FOR INDUSTRIAL HYGIENE NEWS LETTER

With the July, 1946, issue (Vol. 6, No. 7) the *Industrial Hygiene News Letter* of the U. S. Public Health Service puts on the garb of maturity. It has graduated into a printed magazine with pleasing makeup and typography. It continues to be an interesting brief summary of happenings in the world of industrial hygiene. Industrial Hygiene Division, U. S. Public Health Service, Washington, D. C.

GRASSROOTS PLANNING

We told you about Blue Earth County's (Minn.) Council on Governmental Relations in February (p. 184). The second of these rural county studies sponsored by the Spelman Foundation in coöperation with the Council on Intergovernmental Relations and committees of the local community involved has now appeared. It is called "Adventure in Government Gearing in Henry County, Indiana." It represents a progress report of a demonstration "in better meshing of governmental gears and in the process enabling local government to regain and maintain a major rôle in solving the problems of our complex economy and government."

This is a bright and stimulating report. A Rube Goldberg type of cartoon poses the problems—gears and wheels and engines pulling in various ways, some manned and operating, some not, some operating outside the main machine—this is the confusing local governmental machine. But here the solutions proposed are local, not state or federal. Available from Council on Intergovernmental Relations, New Castle, Ind.

The third county that is in process of a similar demonstration is Colquitt County, Georgia. On January 1, 1946, Santa Clara County, California, was approved by the Spelman Fund for a similar study. Their reports are worth watching for. They represent fundamental attempts to modernize rather than weaken local government.

SUMMER THOUGHTS ON MEDICAL CARE

In the August *Survey Graphic* (112 East 19th Street, New York) Michael Davis brings poetic prose and the historical traditions of the 150 year old Boston Dispensary to the service of understanding the implications respectively of the National Health Bill of 1946 and the Taft-Smith-Ball Bill. Dr. Davis, who it will be remembered is the chairman of the Committee on Research in Medical Economics, predicts that the two bills will be in competition in the 1947 Congress. Says he, "Senator Taft and his allies will push the national medical charity bill with all the weapons that political shrewdness and plenty of money can command. Against them, and behind an improved National Health Bill with broadened and bipartisan sponsorship, must rally democratically minded Senators and citizens of both political parties."

Read "A Hammock in the Sun" as an idyll of a New England summer and as a footnote to the history of charity in the United States, as well as for its more serious discussion of better medical care.

WORTH ACQUIRING

TB Facts—If every layman knew and followed what is contained in this 12 page pamphlet of the National Tuberculosis Association (1790 Broadway, New York 19) tuberculosis would

be both an unnecessary and an unknown disease. In brief and readable language it tells how extensive the disease is, where it hits, how it is found, what should be done for it, and the community measures necessary in case finding, relief, hospital and nursing care, health education, and community organization. Among its quotable sentences are, "The Christmas Seal is an immigrant that became a good American." "The basic unit for tuberculosis work is the local administrative unit, the county." "If our people wish to eradicate TB before the turn of this century, it is within their power to do so."

From the same source comes *Admission Chest X-ray Service.* This is a kit of materials aimed to aid hospitals in fitting chest x-ray of patients into the regular admission procedure. Prepared jointly by the American Hospital Association, the U. S. Public Health Service, and the National Tuberculosis Association, for hospitals and clinics, this has a variety of guidance and propaganda material as well as some suggested news releases. This is all a part of a forthcoming national anti-tuberculosis campaign to promote routine chest x-raying of all hospital personnel and of patients on admission.

The Health Education Service of the New York Tuberculosis and Health Association (386 Fourth Avenue, New York 16) announces a series of health exhibits consisting of displays and related pamphlets, films and posters. The exhibits are available, but offered locally only without charge.

The June Connecticut *Health Bulletin* announces "Suggestions for Adequate Medical Service in Industry" prepared by the Bureau of Industrial Hygiene. It is useful in planning or appraising an industrial health program. Copies in mimeographed form are available without charge from the Bureau of Industrial Hygiene, Connecticut State Department of Health, 1179 Main Street, Hartford 1.

Credit lines has previously mentioned the Family Health Series of the New York Community Service Society (Feb., 1946, p. 185). The May, 1946, revision of No. 3 in the Guide for Public Health Nurses, *Tuberculosis*, is now available from Community Service Society, 122 East 22nd Street, New York 10 at 5¢, plus postage.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.

The Common Sense Book of Baby and Child Care—*By Benjamin Spock, M.D. New York: Duell, Sloan & Pearce,* 1946. 527 pp. Price, $3.00.

The number of volumes in print and available to the public on how to bring up a baby is legion. The poor mother who wants to learn about how her baby grows and what to do or not to do about it does not lack for many sources of advice. Her problem is rather to decide which book to select.

Now Dr. Benjamin Spock offers his own very personal advice for babies and children of all ages. The attitude expressed and the general tenor of the advice typify the present-day departure from rigidity in schedules and training. One can confidently predict that it will be a huge success with mothers, for Dr. Spock has succeeded to an amazing degree in striking a middle ground in his advice. He anticipates the objections that mothers may raise against advice which counsels freedom of action for the child, and is ready with sensible answers. A long experience in answering specific questions from parents contributes to his ability in carrying this off successfully. His style is so engaging and friendly that the book is unusually readable. The illustrations of Dorothea Fox are charming and very appropriate. All in all, the book may be most heartily recommended.

MYRON E. WEGMAN

Greet the Man—*By Harold Wilke. Philadelphia: The Christian Education Press,* 1945. 218 pp. Price, $1.50.

A penetrating insight into the thoughts and feelings of wounded servicemen is presented by the author. His book, containing many suggestions as to how healthful personal relations with the war wounded may be established, is intended for two groups of readers: persons who will help others (ministers, chaplains, social workers, etc.) and persons who have a wounded man in their family circle.

The material included is based not only upon his experience as a parish minister, his experience in ministering to the sick and disabled, but also upon intensive study of his own feelings and responses as a handicapped person. The author records many personal experiences so that the principles of "meaningful personal relations" will be better understood.

LOUIS LONG

Into the Freezer—and Out—*By Donald K. Tressler, Ph.D., Clifford F. Evers, B.S., and Lucy Long. New York: Avi Publishing Co., Inc.,* 1946. 223 pp. Price, $2.50.

This is an excellent practical guide to the proper freezing of foods. Much of the material presented is a digest of facts taken from the technical publication by Tressler and Evers, *The Freezing Preservation of Foods,* but now presented in a form that can be easily followed by the owner of a home freezer, a renter of space in a frozen food locker, or by the operator of a locker plant.

The authors point out the rapid expansion of the frozen food industry and the increasing popularity of frozen foods. From that point on, the book gives a step by step discussion of all phases involved in the correct freezing

of foods. Advice is given regarding the size freezer to buy, how to care for the freezer, the services a locker man can and does render, how best to use freezer space, and the merit nutritionally of using frozen foods.

Then follows a detailed discussion of points which must be carefully considered if the resulting frozen product is to be of high quality. In the case of fruits and vegetables, variety, maturity, speed from harvest to freezer, proper packaging, and correct holding temperature are all stressed as important.

A planting and harvesting guide is presented which gives information on the best varieties for freezing of all vegetables and fruits, and then explicit directions and instructions are given for the preparation of vegetables, fruits, juices, purées, meat, poultry, shellfish, dairy products, baked goods, pastries, and wild game meat and fish. Not only are instructions for freezing given but equally important are directions for the thawing, preparation, and cooking of foods after they come out of the freezer.

The book is illustrated and is a real storehouse of information on frozen foods. H. S. ADAMS

Medicine in Industry—*By Bernhard J. Stern, Ph.D. New York: Commonwealth Fund,* 1946. 223 pp. Price, $1.50.

Medicine in Industry, the fourth of twelve special studies prepared for the New York Academy of Medicine's Committee on Medicine and the Changing Order, is a valuable contribution to the rapidly growing literature on social medicine. Those concerned with public health and the administrative problems of medical care will find it a concise source of useful information.

As in an earlier monograph in the series, American Medical Practice in the Perspectives of a Century, Dr. Stern's approach is that of a sociologist attempting to assay the contribution of medicine to the social order in which we live. The first chapters are devoted to a summary of the beneficial as well as the deleterious effects of mechanization and mass employment upon health, and to a review of the background and trends of social and legislative measures aimed to meet the constantly changing health and medical needs of members of our highly complex industrial civilization.

The author emphasizes, in the concluding chapters of the volume, the unmet challenges and the relatively unexplored opportunities for the application of preventive and rehabilitative measures in an industrial setting.

Some readers may believe that Dr. Stern has minimized the recent accomplishments of industrial medicine. This, I am sure, is not his intention; rather, it is to draw proper attention to the technological lag in utilizing available scientific knowledge in dealing with some of the pressing medical problems of the day THOMAS D. DUBLIN

Neurosis and the Mental Health Services—*By C. P. Blacker, M.A., M.D., F.R.C.P. New York: Oxford University Press,* 1946. 218 pp. Price, $5.00.

This volume by Dr. Blacker is the report of a survey of the Mental Health Facilities in England and Wales, begun in October, 1942, under the sponsorship of the Ministry of Health. The report and recommendations, however, are the personal opinions of Dr. Blacker. The survey was originally instituted to secure better coördination of existing services due to the exigencies of the war, but it was broadened so as to consider the post-war needs of the country.

The factual results of the survey are presented and interpreted. There are specific proposals for immediate and

for the future reorganization of the mental health services. Of particular interest are the proposed function of the medical schools in the development of the program, the integration of the mental in the general health service, and proposal of services which should be provided for a hypothetical population of a million as an administrative unit.

There are many similarities with the problems and needs for services which may be found in this country. The information and discussions contained in this report have great value for anyone concerned with the development of mental health facilities.

JAMES M. CUNNINGHAM

Microbiology for Nurses — *By Mary Elizabeth Morse, M.D., and Martin Frobisher, Jr., S.B., Sc.D. (7th ed.) Philadelphia: Saunders,* 1946. 521 pp. 214 illus. Price, $3.00.

For twenty-seven years Morse and Frobisher's *Microbiology for Nurses,* known as "Bacteriology for Nurses" until 1941, has been a leading text in a field of ever-increasing importance to nursing education.

This 7th edition eliminates obsolete material and includes new methods and results of research that have been developed during the war. Among the new topics presented are: Penicillin, Influenza Vaccine, and the Electron Microscope, which makes visible particles never before scientifically considered. One chapter is devoted to Biological Transmission of Diseases by Insects, with special reference to malaria, about the control of which much was learned in World War II. Emphasis on public health and the social aspects of disease is a significant trend in this edition.

Instructors and students will appreciate the presentation of fundamental principles of microbiology and the integration of theory and practice to form a well organized, usable textbook on a subject of great scientific detail.

HELEN M. ROSER

The Municipal Year Book—1946 —*Edited by Clarence E. Ridley and Orin F. Nolting. Chicago: International City Managers Association,* 1946. 593 pp. Price, $8.50.

The best description of this volume is taken from its foreword—"The chief purpose of this volume, as in past years, is to provide municipal officials with discussions of the current problems of cities throughout the country with facts and statistics on individual city activities and with analyses of trends by population groups."

The general content is the same as that for 1945 with data brought up-to-date. The personnel section contains new features dealing with hours of work, overtime pay, pensions, veterans' preference, and salaries of chief municipal officers. New data in the planning section give an analysis of works projects in the blueprint and specifications stage as of the beginning of 1946. More information on the economic base of metropolitan districts for each city of over 10,000 population is also a feature of this volume. Much more information concerning cities of the 5,000–10,000 population group will be found in this edition.

Unfortunately, the tabular data on city-county health units included in the 1945 volume is not continued in this one.

FRANCIS B. ELDER

Qualitative Organic Microanalysis—*By Frank Schneider, Ph.D. New York: Wiley,* 1946. 218 pp. Price, $3.50.

The purpose of this book is to provide a guide to techniques and manipulations employed for the identification of organic compounds. The micro methods described entail the use of

relatively inexpensive equipment and thus they are suitable for courses designed to give training in these techniques.

A considerable portion of the text is devoted to general methods of purification of compounds so that tests of purity can be made. Elementary analysis for carbon, oxygen, nitrogen, sulfur, halogens, and phosphorus, and for water are briefly described. Methods for the determination of physical constants are detailed as well as for the determination of solubility.

The order of the tests used in this book is that of the Mulliken Huntress scheme. However, there is some correlation with the schemes of Kamm, and Shriner and Fuson through the solubility classification which is given. The tests for compounds of Order I comprising aldehydes, carbohydrates, acids, phenols, esters, acid anhydrides and lactones, ketones, alcohols, and hydrocarbons and ethers; and of compounds of Order II comprising compounds containing nitrogen in addition to carbon, hydrogen, and oxygen, are relatively thoroughly treated; but only brief treatment (4 pages) is given to compounds containing halogen or sulfur. Numerous line drawing illustrations of equipment are included. The book should serve the purpose for which it was designed.

MORRIS B. JACOBS

Drainage for Health in the Caribbean Area—*By E. H. Magoon, M.S. Havana, Cuba: Compania Editora de Libros Y Folletos,* 1945. 556 pp.

Malaria as it is found in the Central American and Caribbean countries is the health factor considered. The text is in Spanish and English in parallel columns. Localities are studied individually. Although general topographical, meteorological, epidemiologically, and control measures are discussed, the central theme is control by drainage. There are excellent chapters on mixing of concrete and the manufacture of drainage tile, slabs, inverts, etc. Stream flow measurement is also well presented.

There are good chapters on the construction and use of stable traps, of screening and use of bednets and of field surveying equipment. The sections that describe hand tools and mechanical equipment should be particularly valuable. The use of larvicides and of DDT or pyrethrum for the control of adult mosquitoes is not developed. Although there are copious illustrations — photographs, plans, sketches, etc. — they are all grouped in a section at the back of the book which makes reference to them irksome. Clarity of some sketches is lost in the effort to crowd too many views into the space available.

FRANCIS B. ELDER

Out of Carnage (The Battle Against Death in War)—*By Alexander R. Griffin. New York: Howell, Soskin,* 1946. 327 pp. Price, $3.00.

Out of Carnage is a compilation apparently based on hearsay, newsdrama, official reports and interviews with technically trained persons. It lacks cohesion—in fact skips with utter abandon from Army to Navy, to Surgery, to DDT, to body armor, to miscellaneous inventions and rescue techniques. Numerous technical errors are in evidence, though many of them are of minor importance. The text is largely couched in the pseudotechnical dramatic jargon now so popular with many lay writers on medical subjects. There are zooming ambulance planes, magic powders, and miracle ointments; the punctual appearance of great medical discoveries at the precise moment of destined need belies the searching toil and intellectual integrity of our scientists.

The author obviously has searched

diligently for source material and has held access to much technical data to come out of the war. It is indeed regrettable that he could not have taken more time to weave them into a studied and authentic history of the medical highlights of World War II.

TOM F. WHAYNE

Diagnosis and Treatment of Pulmonary Tuberculosis—*By Moses J. Stone, M. D. and Paul Dufault, M. D. Philadelphia: Lea & Febiger,* 1946. 325 pp. 93 illus. Price, $3.50.

The authors of this small book, almost pocket sized, do not pretend to treat exhaustively any of the subjects discussed, and they introduce practically no material that has not been published elsewhere. The viewpoint expressed is modern.

The volume will be helpful to the general practitioner or medical student who wishes a ready-reference manual on generally accepted facts and diagnostic and therapeutic procedures relating to pulmonary tuberculosis. The specialist will wish to consult authors who deal more comprehensively with the subject. JOHN H. KORNS

Post-War Venereal Disease Control: Proceedings, National Conference, St. Louis, Missouri, November 1944; Supplement No. 20 to The Journal of Venereal Disease Information—*Washington: Federal Security Agency, U. S. Public Health Service. Gov. Ptg. Office,* 1945. 213 pp. Price, $.35.

This report on the Third National Conference on Venereal Disease Control represents the combined thinking of international authorities in this field. It embraces all phases of venereal disease control, including administration, education, epidemiology, diagnosis and treatment, with particular reference to the application of knowledge gained during the war to venereal disease control of the future.

The public health officer will find this volume very helpful in venereal disease control planning. The pros and cons for the various types of activities are brought out in the discussions, leading to ultimate agreement on the courses to be followed. Those who have lost contact with this field during the war will find the report invaluable in bringing them up to date on this subject. WILLIAM A. BRUMFIELD, JR.

Topley and Wilson's Principles of Bacteriology and Immunity—*By G. S. Wilson, M.D., and A. A. Miles, M.A. (3rd ed.). Baltimore: Williams & Wilkins,* 1946. 2 vol. 2054 pp., 44 pp. index, illus. Price, $12.00.

Not only to bacteriologists but also to public health personnel in general Topley and Wilson's book is the standard compendium comparable to Rosenau's *Preventive Medicine and Hygiene.* The loss of Topley from participation aroused qualms in all of us. However, Wilson was uniquely fortunate in gaining as his new collaborator an old colleague, A. A. Miles. Inevitably, Topley's touch is still missed, but this third edition is another masterpiece quite in keeping with its predecessors.

The authors were confronted with a difficult decision. The one volume second edition was ungainly with over 1600 pages. If a reasonable one volume text was contemplated for the third edition, in order to encompass nine years of highly productive bacteriological developments, the jettison of classical basic material would have been necessary. Instead, the decision was to expand into two volumes of approximately 1000 pages each and produce an advanced text and reference book. Within the additional 400 pages the bibliography is almost doubled and is very complete through 1942 and surprisingly so into 1944. One notes that

cognizance is taken of Ravenel's criticism of the second edition. His contribution in clarifying the bovine source of human tuberculosis is now recognized.

With few exceptions the arrangement and presentation are similar to those of previous editions. The frequent helpful summaries have been continued. A new chapter on Chemotherapy has been included and an excellent chapter on Air Bacteriology has been substituted for that of Soil Bacteriology. Recognition of the genus *Shigella* and of the genus *Salmonella* has resulted in chapters for each. There have been revisions within the other chapters appropriate to advances in knowledge. The index, standard of printing, and freedom from errors are, as in the past, excellent. The illustrations have benefited by the inclusion of electron micrographs.

Omission of the mycoses other than actinomycosis will mean more to us in the United States where blastomycosis, coccidioidomycosis and histoplasmosis pose problems not only for the bacteriologist but also for the health officer and clinician. If progress in this field maintains its present pace, the next edition will be handicapped seriously if the important fungi are not included. Unfortunately, that would necessitate further expansion. In its present size one must question its practicability as a text for medical classes. However, for more advanced studies it will continue to be the standard and requisite.

CHARLES E. SMITH

Annual Reports: How to Plan and Write Them—*By Beatrice K. Tolleris. New York: National Publicity Council,* 1946. 39 pp. Price, $1.00.

In a recent annual report of a municipal public health department appears this astonishing sentence: "Because of . . . the shortage of time due to the pressure of *essential* activities, and the fact that annual reports are seldom read . . . there will be no detailed written summary of this Department's activities . . ." The able city health officer whose attitude toward a potentially influential health educational device is revealed in all its nakedness by that sentence should read *Annual Reports: How to Plan and How to Write Them.* And so should you.

And so should you, even though you have already learned that an annual report is not a statistical mausoleum in which the deceased felines removed from the public gaze, and other unsavory events are reduced to totals and laid to rest. And so should you read this brochure, even though you have, unaided, come to the conclusion that long lists of employees or stilted letters of transmittal to the Honorables of the Common Council do not constitute an inspired introduction to an account of the year's activities. Yes, so should you read it even though your annual report is a straightforward and sprightly recounting of the twelve month successes and failures. Your report may be pretty good, but it could be better. And this newest of the HOW-TO-DO-IT series will help you make it so.

You have an obligation—if you haven't an irresistible desire—to tell Mr. Nabob and Mrs. Cross Tracks what you have been doing with their money. How will you tell them? Strangely enough there are several ways. Have you canvassed them all? *Annual Reports* goes over the methods with you—with illustrative cases. You can't get away from statistics, being in the line of business you are engaged in. But there are ways and ways of putting statistics to work. *Annual Reports* goes into this matter in illuminating detail. Finally, it has some cogent words to say about the clothes this perennial accounting of your steward-

ship will wear. Do your sanitary inspectors start out on their public business clad in dungarees? Do your public health nurses wear slacks and sweaters on duty? Do these other messages, your annual reports, go about their illuminating task dressed in drab covers from which they peer suspiciously in bleary print, their eyes surrounded by antiquated, boxed borders? If they do, then Brother, you very badly need to ponder over the last pages of this HOW-TO-DO-IT! There you will find what the well dressed report should wear. And the price of all this help is only one dollar.

RAYMOND S. PATTERSON

Industry, Tuberculosis, Silicosis, and Compensation—*Edited by Leroy U. Gardner, M.D. New York: National Tuberculosis Association,* 1945. 126 pp. Price, $2.00.

In this small volume are twelve current discussions covering certain phases of (1) pulmonary tuberculosis, and (2) pneumoconiosis as encountered in industry, with some consideration given to (3) legal compensation aspects of such diseases. This is not a complete coverage of the subjects listed, nor a compendium thereof. Rather, it is a group of papers covering in part certain phases of the subjects.

Hilleboe and Gould give a good account of their experience with mass radiography, including such recent developments in the radiographic field as the Morgan phototimer. Reid's thoroughgoing account of the control of tuberculosis at the home office of the Metropolitan Life Insurance Company deserves study by all who are interesting in tracking down the presence of the tubercle bacillus in workers.

The section on pneumoconiosis, including silicosis, the effects of arc welding and value of aluminum therapy, is in itself worth the price of the book. Wright, Brahdy, and Kuechle have enunciated some principles relating to workmen's compensation coverage deserving of more general practice.

For those engaged in work related to these problems, this series of papers contains much valuable information, and should be a part of their reference library. W. A. SAWYER

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Document of State—Preserved in the files of every health agency in the land should be a copy of the issue of Public Health Reports devoted to the recent international health conference and the World Health Organization now in course of construction.

ANON. The World Health Organization. Pub. Health Rep. 61, 35:1259 (Aug. 30), 1946.

More Than the Digits Are Reversed—In 1917 when the Bureau of Animal Industry began testing cattle for tuberculosis, 3.2 per cent were positive reactors. This year the percentage is 0.23. Through the years nearly 300 million cattle have been tested but the job is not yet done.

ANON. Control of Bovine Tuberculosis in the United States. Pub. Health Rep. 61, 36:1315 (Sept. 6), 1946.

In English Day Nurseries—This may be of only casual interest to you, but a made-in-Britain study reveals an unusually high incidence of respiratory infections among children (of working mothers) who were sheltered in wartime day nurseries. These infections con-

stitute a risk to health that calls for a careful weighing of the hazards and benefits of nurseries to the child and the community of children.

ANON. The Health of Children in Wartime Day Nurseries. Brit. M. J. No. 4467: 217 (Aug. 17), 1946.

Semi-Annual Tests Advocated—"Pulmonary tuberculosis is the most serious medical problem that confronts the health departments of medical schools." So begins the summary of a twenty year survey of students at Harvard Medical. Not only students, but nurses and interns should have x-ray reëxaminations at not greater than semi-annual intervals—is the final recommendation.

BREAM, H. P., and KANE, L. W. Pulmonary Tuberculosis in Harvard Medical Students. New England J. Med. 235, 10:316 (Sept. 5), 1946.

"Something More Is Desperately Needed"—In the first of his Harben Lectures, a Mayo Foundation researcher reviews the early and fruitless history of chemotherapeutic efforts to cure tuberculosis. He lays down some rules for effective scientific research and promises to tell in a following lecture about streptomycin.

FELDMAN, W. H. The Chemotherapy of Tuberculosis. J. Roy. Inst. Pub. Health & Hyg. 9, 9:267 (Sept.), 1946.

Has Another Idol Feet of Clay?—Just as several million children enter school to face an army of teachers determined to condition them to use their handkerchiefs ("to stop the spread of colds and coughs") there appears a report asserting that more germs are spread by blowing the nose than by sneezing, coughing, or breathing. The handkerchief fails in four ways to live up to its reputation: germs are released after the handkerchief dries, germs are dispersed during the blow, they contaminate the blower's hands, and are then transferred to fomites.

HAMBURGER, M., JR., and GREEN, M. J. The Problem of the Dangerous Carrier of Hemolytic Streptococci. J. Infect. Dis. 79, 1:33 (July-Aug.), 1946.

A Word of Caution—If we utilize all our resources we can chest x-ray all adult Americans. Are we to condemn as tuberculous everyone whose film shows lesions characteristic of early tuberculosis? Suspicious film findings must be confirmed; otherwise harm will be done.

HILLEBOE, H. E. What Is Early Tuberculosis. Pub. Health Rep. 61, 36:1295 (Sept. 6), 1946.

Now It Is Told—So much publicity has been given the committee report on streptomycin that reference to that important document needs scarcely to be included here. But if you haven't looked it up, do. Streptomycin should be used against the Gram-negative bacilli. It is likely to prove valuable as a palliative against tuberculosis, when there is enough to go round.

KEEFER, C. S., *et al.* Streptomycin in the Treatment of Infections. J.A.M.A. 132, 1:11 (Sept. 7), 1946.

All Too True — Little can be achieved in the rehabilitation of the tuberculous, say these authors, without the coöperative effort of management and labor. Without rehabilitation, re-employment and after-care, most of the millions spent on case finding and medical care will be wasted. One barrier to reëmployment is fear.

KIEFER, N. C., and HILLEBOE, H. E. Rehabilitation of the Tuberculous in Industry. J.A.M.A. 132, 3:121 (Sept. 21), 1946.

Caries in Parents and Their Children—Findings of this study demonstrate strong familiar factors in susceptibility and resistance to dental caries. Detailed investigations of the genetic mechanisms involved are promised.

KLEIN, H. The Family and Dental Disease. J. Am. Dent. A. 33, 11:735 (June 1), 1946.

Not for Rule-of-Thumbers—There is so much that is repeatable in this paper that I have only with iron self-control limited myself to one quotation: "The only groups in American life who attain real professional status are those who work hard at it." Now you'll have to read the whole paper to find out the implications of this comment. You'll be well repaid for the reading.

KOOS, E. L. **Our Changing Society and the Public Health Nurse.** Pub. Health Nurs. 38, 9:479 (Sept.), 1946.

Look Not on the Egg When It Is Raw—Germs of pullorum disease of chickens are known to be present in eggs laid by sick hens, but it was thought that humans were immune. Now comes the report of an extensive outbreak of gastroenteritis thought to have been caused by eating a rice pudding containing insufficiently cooked eggs. What next?

MITCHELL, R. B., *et al.* An Outbreak of Gastroenteritis Presumably Caused by *Salmonella pullorum*. J. Infec. Dis. 79, 1:57 (July-Aug.), 1946.

Adapting Facilities to Services—Four patterns for health centers are presented. The discussion is concerned with structural designs to facilitate operating relationships among occupants. If you have any prospect whatever of enjoying the advantages of a health center you will need this.

MOUNTIN, J. W., and HOENACK, A. The Health Center. Pub. Health Rep. 61, 38: 1369 (Sept. 20), 1946.

Laymen at Work—An enthusiastic report on the local dental health programs stimulated and supported by the New Jersey State Health Department's Division of Dental Health—but not bossed by that agency. Local autonomy, wide participation, balance of lay and professional influences; these are some of the characteristics.

NYSWANDER, D. B. New Jersey Citizens Know What They Want. Dental Health. 6, 3:15 (Aug.), 1946.

It's Inexpensive and School-Day Saving—An epidemic of ringworm of the scalp was controlled in one year without barring infected children from school and by means of topical applications. This will be good news to those who are faced with this miserable infection and are unable to obtain the usually recommended x-ray apparatus.

SCHWARTZ, L., *et al.* Control of Ringworm of the Scalp among School Children. J.A.M.A. 132, 2:58 (Sept. 14), 1946.

Conservation of the Family—How the American Vigilance Association, the New York Society for Sanitary and Moral Prophylaxis, the Pennsylvania Society for Prevention of Social Diseases, the American Purity Alliance, and a lot of other associations with dreadful names combined to form the A.S.H.A., and what the combination of agencies has been doing since is a useful historical document. Future opportunities and plans are included.

SNOW, W. F. The American Social Hygiene Association. J. Soc. Hyg. 32, 6:241 (June), 1946.

Transcutaneous Tuberculosis Vaccination—BCG gets a boost in Britain. The voluntary tuberculosis agencies ask the Minister of Health "to make BCG available for trial in this country." The memorandum accompanying the request goes thoroughly into all the pros and cons of the problem.

TYTLER, W. H. Memorandum on BCG. M. Officer. 76, 9:95 (Aug. 31), 1946.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

APPLICATIONS OF GERMICIDAL, ERYTHEMAL AND INFRARED ENERGY. By Mathew Luckiesh, D.Sc., D.E. New York: D. Van Nostrand, 1946. 463 pp. Price, $5.50.

BODY MECHANICS IN NURSING ARTS. By Bernice Fash. New York: McGraw-Hill, 1946. 130 pp.

HEALTH-HAPPINESS-SUCCESS SERIES (BUILDERS FOR GOOD HEALTH, GOOD HEALTH IS FUN, HEALTH FOR YOUNG AMERICANS, WORKING TOGETHER FOR HEALTH, YOUR HEALTH AND HAPPINESS). By William E. Burkard, Raymond L. Chambers and Frederick W. Maroney. New York: Lyons and Carnahan, 1946. 375 pp. Price, $1.00 each.

THE CONTROL OF VENEREAL DISEASE. By R. A. Vonderlehr, M.D., and J. R. Heller, Jr., M.D. New York: Reynal & Hitchcock, 1946. 245 pp. Price, $2.75.

DENTISTRY—AN AGENCY OF HEALTH SERVICE. By Malcolm Wallace Carr. New York: The Commonwealth Fund, 1946. 219 pp. Price, $1.50.

FREE MEDICAL CARE. By Clarence A. Peters. New York: H. W. Wilson Company, 1946. 378 pp. Price, $1.25.

HEARINGS BEFORE THE COMMITTEE ON EDUCATION AND LABOR—S. 1318. Maternal and Child Welfare. Washington: Gov. Ptg. Office, 1946. 391 pp.

IT'S AN ALLERGY. By Frank G. Crandall, Jr., M.D. Hollywood: Murray & Gee, Inc., 1946. 313 pp. Price, $3.50.

MILK MARKETING UNDER FEDERAL CONTROL. By Carl McFarland. New York: Milk Industry Foundation, 1946. 205 pp. Price, $7.50.

THE NUTRITION FOUNDATION, INC. (REPORT OF SCIENTIFIC DIRECTOR). By Charles Glenn King, M.D. New York: The Nutrition Foundation, 1946. 81 pp.

PENICILLIN—ITS PRACTICAL APPLICATION. By Sir Alexander Fleming. Philadelphia: Blakiston, 1946. 380 pp. Price, $7.00.

PRACTICAL MALARIOLOGY. By Paul F. Russell, *et al.* Philadelphia: Saunders, 1946. 684 pp. Price, $8.00.

SYMPOSIA ON "PRESENT DAY SOCIAL AND ECONOMIC ASPECTS OF NATIONAL HEALTH" AND "UNESCO AND AMERICAN PARTICIPATION IN ITS ACTIVITIES." (Proceedings of the American Philosophical Society) Vol. 90, No. 4. The American Philosophical Society. Philadelphia: The American Philosophical Society, 1946. 317 pp.

PROFESSIONAL ADJUSTMENTS I. By Alice L. Price, B.S., R.N. Philadelphia: Saunders, 1946. 212 pp.

PUBLIC HEALTH AND PREVENTIVE MEDICINE. By Morton C. Kahn, M.A., Ph.D., D.Sc. New York: Oxford University Press, 1942. 534 pp. Price, $2.00.

REPORT—SCHOOL AND COMMUNITY HEALTH WORKSHOP. The Pennsylvania State College. State College, Pennsylvania: Division Health Education, Pennsylvania Department of Health, 1945. 238 pp.

SUGGESTED GUIDE FOR TEACHING MOTHERS' CLASSES. Maternity Center Division. Brooklyn: Visiting Nurses Association of Brooklyn, 1945. 70 pp. Price, $1.00.

SOME PROPERTIES AND APPLICATIONS OF D.D.T. Ministry of Supply. London: His Majesty's Stationery Office, 1946. 34 pp. Price, $.15. (Obtainable from British Information Service, New York.)

STATE LABOR LAWS FOR WOMEN WITH WARTIME MODIFICATIONS (PART V: EXPLANATION AND APPRAISAL). Women's Bureau, Department of Labor. Washington: Gov. Ptg. Office, 1946. 66 pp. Price, $.15.

TREATMENT OF BRONCHIAL ASTHMA. By Vincent J. Derbes, M.D., and Hugo Tristram Engelhardt, M.D. Philadelphia: J. B. Lippincott, 1946. 466 pp. Price, $8.00.

ASSOCIATION NEWS

SEVENTY-FOURTH ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
CLEVELAND, OHIO — NOVEMBER 12–14
Meetings of Related Organizations—November 11

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Berry C. Abernathy, M.D., Madison and Tensas Parish Health Units, Tallaluah, La., Director

George E. Atwood, M.D., D.P.H., 1110 Elizabeth, Waycross, Ga., Commissioner of Health, Ware County Board of Health

Terry Bird, M.D., P. O. Box 103, Apalachicola, Fla., County Health Officer

Roderick M. Buie, Sr., M.D., Guilford County Courthouse, Greensboro, N. C., Guilford County Health Officer

Samuel P. Burt, M.D., 127 N. Main, Louisburg, N. C., Franklin County Health Officer

John R. C. Carter, M.D., C.M., Dona Ana County Health Dept., Las Cruces, N. M., Health Officer

Isee L. Connell, M.D., St. Clair County Health Dept., Ashville, Ala., Health Officer

Hubert D. Crow, M.D., 454½ W. Washington St., Suffolk, Va., District Health Officer

Henry H. Eisenberg, M.D., 4756 S. Ingleside Ave., Chicago 15, Ill., Director, Venereal Disease Clinics, Chicago Health Dept.

Joseph F. Emmons, City Hall, Long Branch, N. J., Health Officer

Robert H. Felix, M.D., M.P.H., Chief, Mental Hygiene Division, U. S. Public Health Service, Washington 25, D. C.

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William B. Hunter, M.D., Lillington, N. C., Harnett County Health Officer

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Robert R. King, Jr., M.D., P. O. Box 387, Boone, N. C., District Health Officer

Mark Landquist, 103 Harvard Ave., Modestro, Calif., Health Officer

Fred Loe, M.D., State Health Dept., Carson City, Nev., State Health Officer

Roy W. McGee, M.D., M.S.P.H., 923 Court House, Atlanta, Ga., Commissioner of Health, Fulton County Health Dept.

Edward L. McIntosh, M.D., Box 27, Camden, Ala., Health Officer, Wilcox County Health Dept.

Cyrus F. Newcomb, M.D., 505 S. Fifth, Champaign, Ill., Acting Director, Champaign-Urbana Health Dist.

George F. O'Brien, M.D., M.S.P.H., 2410 H St., P. O. Box 1412, Modesto, Calif., Stanislaus County Health Officer

Charles K. Olivier, M.D., 406 Oak Ave., Lafayette, La., Director, Lafayette Parish Health Unit

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Urcicio Santiago, M.D., Rocha Galvao 30, Salvador, Bahia, Brazil, S. A., Health Officer and Teacher of Epidemiology of the Nursery School of Bahia

Robert F. Sayre, M.D., Columbia and Hamilton County Health Depts., Jasper, Fla., Director

Benton VanDyke Scott, M.D., 116 Quincy St., Hancock, Mich., Director, Houghton-Keweenaw-Baraga District Health Dept.

Louis E. Silverthorn, M.D., P. O. Box 6, Victoria, Tex., Director, Victoria County Health Unit

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Engineering Section

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School Health Section

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Dental Health Section

Harold K. Addelston, D.D.S., 424 Madison Ave., New York, N. Y., Asst. Professor and Head of Dept. of Dentistry for Children, N. Y. University, College of Dentistry

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Louis E. Yerkes, D.D.S., 825 Linden St., Allentown, Pa., Dentist

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J. Wellington Crane, M.A., 986 Maurice Ave., Rahway, N. J., Clerk, New Jersey Reformatory
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Peter F. Lansing, University Hospital, Ogden & Olcott, Chicago, Ill., Student, University of Chicago
Eloise R. Sherman, 1119 Cotton Exchange Bldg., Dallas, Tex., Regional Administrative Consultant, U. S. Childrens Bureau
William H. Weidman, M.D., C.M., Uncas on Thames, Norwich, Conn., Supt. and Medical Director, Uncas on Thames

DECEASED MEMBERS

Maharaj Mom Chow Bichitr, Bangkok, Siam, Elected Life Member 1929, Unaffiliated
Jaroslav Drbohlav, M.D., D.P.H., Prague, Czechoslovakia, Elected Member 1946, Laboratory Section
Kathryne Gabriel, R.N., Deposit, N. Y., Elected Member 1924, Public Health Nursing Section
L. W. Hutchins, New York, N. Y., Elected Member 1942, Public Health Education Section
William C. Welling, Hartford, Conn., Elected Member 1923, Elected Fellow 1934, Vital Statistics Section

A YEAR OF PLACEMENT ACTIVITY

On November 1, the Association's Vocational Counseling and Placement Service, which has been functioning under a coöperative agreement with the U. S. Public Health Service, completed its first year of operation. During that year 840 new openings were brought to the attention of the Placement Service and 270 trained candidates for positions registered their availability. An active referral system has led to placements in a gratifying number of cases. Insertions on the employment pages of the Journal have been in increased demand in recent months.

There still exists a serious shortage of trained personnel in the public health field. It is believed that the counseling and recruiting activities of the A.P.H.A.-U.S.P.H.S., which have been called upon mainly by veterans and military personnel, have guided a considerable number of promising young men and women to training facilities for the various types of positions in the public health field. Up-to-date information on fellowships and training centers are kept on file, and coöperation with related counseling and placement agencies is maintained.

Of the professional groups served, the greatest number of opportunities on the register, (329 at last count), is for physicians. Trained and experienced administrators of health programs, full-time clinicians, epidemiologists, school and industrial physicians are in demand, as are also newcomers to the field who are offered training opportunities after employment by several of the states. There are interesting opportunities for public health and sanitary engineers with varying lengths of experience.

In the engineering group a trend toward industry has been noticeable. The reason given by the individual candidates is usually the incentive of higher salaries in the industrial positions. The demand for health educators with M.P.H. degrees from accredited schools of public health and with some field experience also exceeds the supply. In

the laboratory field the number of openings coming to our attention match approximately the requests for positions. Dentists, statisticians, nutritionists, administrators without M.D. degrees, and veterinarians are among the other groups which have been served.

Booth 16 in the Scientific Exhibit area has been assigned to the Association's Vocational Counseling and Placement Service for the Annual Meeting at Cleveland. The Association staff hopes to use this opportunity to make many valuable contacts with employers and candidates in the public health field.

DR. KANDLE JOINS NEW JERSEY DEPARTMENT OF HEALTH

Roscoe P. Kandle, M.D., M.P.H., who since January, 1946, has been Associate Field Director of the Committee on Administrative Practice staff, A.P.H.A., has resigned as of October 15 to join the New Jersey State Department of Health in Trenton as Director of the Bureau of Preventable Diseases. This Bureau includes divisions of venereal disease, maternal and child health, tuberculosis, industrial health, dental health, and cancer, with other activities planned.

A.P.H.A. membership application blank on page XXVIII.

National Conference on Local Health Units

AN INNOVATION IN SELF-EDUCATION

FROM September 9 to 13 there was conducted by the School of Public Health of the University of Michigan at Ann Arbor an educational conference so novel and successful as to call for this brief report to the readers of the *Journal*.

The conference was proposed by the Subcommittee on Local Health Units of the A.P.H.A. Committee on Administrative Practice. It was sponsored also by the Association of State and Territorial Health Officers, the program committee including representatives of both of these bodies, and of the School of Public Health of the University of Michigan.

The student body, if we may so describe the invited assemblage, consisted of state health officers and their directors of local health services. The teaching staff was drawn from several university faculties and from a number of official and voluntary health organizations.

The main object of this conference was the consideration of all aspects of the proposal to make prompt progress toward the provision of at least basic local health services for every area and population group within continental United States. The uniqueness in the undertaking was that the medical health officers holding the highest responsible positions in our state governments were invited to assemble under wholly academic auspices for intellectual, objective, impersonal discussion of a major problem of administration within the framework of local civil government. Apart from the pressure and argument of national and state politics, and free from the temptation to develop opinions biased by potential financial benefits to accrue to their respective states, these key representatives of health administrative philosophy and action in our country came without obligation except that of openmindedness and without commitment other than to use the opportunity for the benefit of the people they serve.

Travel and living costs were met by a grant from the W. K. Kellogg Foundation to the University of Michigan, except in instances where official resources were used. Honoraria to the group of teachers were provided from university funds.

The three morning hours each day were devoted to formal presentation of the academic or theoretical and to the administrative or practical aspects of a major topic without discussion. Two hours in the afternoon were occupied in group discussions of the four topics dealt with in the morning. The leader of each group was selected from among the health officers while the author of the paper presented in the morning served as consultant, stimulating, guiding, and sharing actively in the questions and answers, all with the purpose of summarizing the ideas and tentative common opinion of the group upon the topic at issue The hour from 4 to 5 was devoted to a report to the reassembled class and teachers to hear and discuss further, modify, approve or otherwise the summaries from the four discussion groups.

The five days were spent upon the following topics:

1. The reasons for and possibilities of organizing local health services for each jurisdiction of such size as will permit efficient and economical performance of the required functions, together with consideration of existing and desirable legal authority for these purposes.

2. Scope and facilities, indispensable func-

tions, personnel and training for local health work.

3. Principles of local government organization and finance and methods by which interrelations between state and local governments may achieve sound financial support for local health departments, and the bearing of public opinion and public relations upon adequacy of support.

4. Promotion of local health services by organization and action of voluntary associations of citizens, by support of physicians, by professionally and educationally sound public relations leadership.

5. Recruitment of personnel, salary schedules, merit system, promotion of professional and technical education of workers needed in local health departments.

The latter half of the fifth day was spent in roll-calling the states to review their successes and difficulties in arranging for local health departments throughout each state area. Each state responded to the exhibit of the map of present and proposed distribnution of local health departments on a full-time basis by a brief note of its problems to be overcome and the direction and strength of its plans for the immediate future.

It is planned to have the several lecture presentations, pertinent discussions, and group conclusions published as a supplement to the *American Journal of Public Health* as soon as practicable.

Only three of the states lacked representation at this conference. The health interests of the federal government and of several of the national foundations were included among the invited guests. Only the limits necessarily imposed upon the hospitality of the university by dearth of living quarters forbade the inclusion of a larger audience for this interesting exploration and use of an educational procedure of considerable merit, applicable with benefit to other groups and at other universities.

The following resolution was presented by the Association of State and Territorial Health Officers at the final meeting of the National Conference on Local Health Units described above:

The Association of State and Territorial Health Officers in executive session hereby expresses appreciation for the unusual opportunity afforded by the National Conference on Local Health Units by bringing together for a week's work the leaders in public health training and the state health officers and directors of local health service of the forty-eight states. It especially appreciates the efforts of Dr. Haven Emerson, Chairman of the Subcommittee on Local Health Units of the Committee on Administrative Practice, as the originator and stimulator of the Conference, and those of Dr. Henry F. Vaughan, Dean of the School of Public Health, for his untiring efforts in making the Conference a success.

It expresses its deep gratitude to the University of Michigan for extending its hospitality and making available its staff, to the American Public Health Association for its efficient assistance and co-sponsorship, and to the W. K. Kellogg Foundation for making funds available to make the Conference possible.

To all of the above it is grateful for this unique privilege.

Because of the wealth of the material presented and its potentially invaluable use for the promotion of total coverage of the nation with full-time local health units, it is the unanimous hope of the Association that the proceedings of the Conference will be published as a supplement to the *American Journal of Public Health*.

The Association of State and Territorial Health Officers

F. C. BEELMAN, *President*
V. A. GETTING, *Secretary*

The following motion with respect to future conferences on local health units was also presented to the final session and unanimously approved:

As evidence of our recognition of the great value of this Conference, we recommend to those who are responsible for planning this Conference that it be repeated, not necessarily next year but at such a time as in their judgment it is justified.

HAVEN EMERSON, M.D.
Chairman, Subcommittee on Local Health Units

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

Positions Available

(Supplemental to list in October Journal)

Wanted: **Physician, Tuberculosis Specialist,** for sanatorium in Seward, Alaska. Salary $550 per month, quarters furnished. Give all qualifications. Write C. Earl Albrecht, M.D., Commissioner of Health, Juneau, Alaska.

Wanted: **Tuberculosis Specialist,** trained in public health, for Director, Division of Tuberculosis Control. Salary $7,800. Write C. Earl Albrecht, M.D., Commissioner of Health, Territorial Department of Health, Juneau, Alaska.

Wanted: **Physician** with public health experience to act as Director, Division of Communicable Disease Control and Assistant to Commissioner of Health. Salary $650 per month. Give all qualifications and experience. Write C. Earl Albrecht, M.D., Commissioner of Health, Juneau, Alaska.

Wanted: **Director,** Division of Venereal Disease Control in Bureau of Preventable Diseases. Headquarters Jacksonville. Salary $5,400–$7,200. Start well qualified man at $6,000. Write State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida.

Wanted: **Medical Director** for Venereal Disease Rapid Treatment Center based on hospital ship in Jacksonville. Salary $5,400–$7,200. Start well qualified man at $6,000. If bachelor, quarters aboard ship and meals at $20 per month furnished. Write State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida.

Wanted: **Venereal Disease Control** Physician for Health Division. Training and experience in clinical, laboratory, and public health aspects of venereal disease control required. Full time. Civil Service. Salary $377–$425 per month. Write Department of Personnel, City of St. Louis, Mo., 14th and Market Streets.

Wanted: **Trained and Experienced Full-time Health Officers** for county health departments in California. Salaries range from $5,400 to $7,200. California license required for employment. Address inquiries to Dr. Ellis D. Sox, Div. Local Health Service, State Dept. Public Health, 760 Market St., San Francisco, Calif.

Wanted: **Assistant in Health Division.** Training and experience in community health organization or public health education necessary. Salary $3,000–$3,500 depending on qualifications. Write Julia L. Groscop, Health Consultant, Council of Social Agencies, 311 South Juniper Street, Philadelphia 7, Pa.

Wanted: **Bacteriologist** for midwestern modern institutional laboratory. Teaching functions in nurses' training school as well as in contemplated school for laboratory technicians. Good journal library facilities. Candidates with master's degree and some experience preferred. Maximum starting salary $3,000. Write **Box O,** Employment Service, A.P.H.A.

Wanted: **Nutrition Workers** with graduate work in dietetics or nutrition and two or more years' experience for health program extension in Georgia. Starting salary $2,880. Write Personnel Administrator, Georgia Dept. of Public Health, State Office Bldg., Atlanta 3, Ga.

The New Mexico Merit System Council announces unassembled periodic examinations for the following positions in the Department of Public Health:

Tuberculosis Control Officer	$400–$500
District Health Officer	300– 400
Director, Sanitary Engineering and Sanitation	300– 400
Supervisor of Milk Sanitation	250– 300
Supervisor of Food Sanitation	250– 300
Sanitarian	175– 215
Venereal Disease Clinician	350– 450
Venereal Disease Lay Investigator	175– 215
P. H. Nurse Midwife Consultant	250– 300
Public Health Nurse Midwife	200– 250
Public Health Nurse	175– 215
Graduate Nurse	165– 185
Associate Engineer	250– 300

Wanted: Health Educator with ability to work constructively with citizen groups in southern city with high percentage industrial workers and Negroes. Salary $200 per month plus travel expenses. Write R. W. Garnett, M.D., Director of Public Health, Danville, Va.

Wanted: Industrial Hygiene Engineer. Minimum of three years in public health engineering including two years in industrial hygiene engineering required. Beginning salary $337 with maximum of $417 in five years. Temporary appointment pending Civil Service examination. Also, industrial hygiene technician to assist in laboratory or field studies under supervision of the engineer or chemist. College degree, courses in chemistry or engineering and/or experience in industrial hygiene field work required. Beginning salary $233 with $288 maximum. Write A. V. Nasatir, M.D., Director, Division of Industrial Hygiene, Dept. of Health, 116 Temple St., Los Angeles 12, California.

Wanted: Two Public Health Nurses for generalized nursing program October 1, 1946. Salary $200 per month for work week of 37½ hours. Car maintenance at six cents per mile. Write Richard Sears, M.D., Director, Muskegon City-County Health Department, Court House, Muskegon, Mich.

Wanted: Public Health Nurse or one wanting to learn public health nursing while at work under supervision. Salary $160 per month. Write R. W. Garnett, M.D., Director of Public Health, Danville, Va.

Wanted: Public Health Nurses. Metropolitan area of Washington. Salary $2,550 plus gasoline and oil. Write Mrs. E. Earle, Chief, Bureau of Nursing, Arlington County Health Department, 1800 North Edison Street, Arlington, Va.

Wanted: Public Health Nurses for staff positions in generalized program. Salary $1,800–$2,400. Write: Director, Visiting Nurse Association, 1715 Crawford, Houston 3, Tex.

Wanted: Three public health staff nurses. Well organized unit and training base. Generalized service. Graduates without public health training $1,920–$2,400. Graduates with full year of public health training in recognized school $2,100–$2,640. Eligibility and classification to be cleared by State Merit System. Own car essential. Adequate travel allowance. Write Dr. D. D. Carr, Director, Topeka City-Shawnee County Health Dept., Topeka, Kans.

Wanted: Qualified public health nurses for resort areas of Michigan, to help develop expanding programs of local health departments. Personnel policies written to offer staff members opportunities to enjoy water and woodland sports and outdoor life year round. Positions open immediately for 10 staff nurses at salary range of $2,100–$2,220, 2 senior nurses at $2,400 and 2 supervising nurses at $2,700–$3,000. Write for personnel form to Director, Northern Peninsula Office, Michigan Dept. of Health, Escanaba, Mich.

Wanted:

1. **Director,** Division including Maternal and Child Health and School Health. Will have an assistant. Full responsibility for planning and developing maternal program and for school examinations. Fifteen health centers in area. Salary $4,000–$5,000, depending on qualifications and merit system approval.

2. **Director,** Health Education. To direct general public health education program, coöperating closely with departments of education and Chattanooga-Hamilton Co. Health Council. Considerable emphasis on tuberculosis control. Educational and public health training required (degree required). Salary $3,000–$3,600, depending on qualifications as above.

3. **Director,** Tuberculosis Control Division. Physician well trained and experienced in reading both photofluorographic and conventional type chest x-rays required. To be in charge of division including visible case register and related records, x-ray clinic, mobile unit and to consult with nursing staff of twenty. Salary $4,000–$5,000, depending on qualifications.

4. **Public Health Nurses,** junior and senior staff nurses. General public health program, urban, rural or combination under excellent supervision. Must have own automobiles. Salaries $1,800–$2,400, with extra mileage allowance.

Write Chattanooga-Hamilton County Health Department, Paul M. Golley, M.D., Director, Chattanooga, Tenn.

Wanted: Physician to head school health program in California city. Annual salary $4,000. Salary for 11 months' service $3,600. Write **Box X,** Employment Service, A.P.H.A.

Wanted: Several Sanitarians qualified in milk, food, and general sanitation in western state health department. Write **Box Z,** Employment Service, A.P.H.A.

Wanted: Health Officer for Montgomery County (Central Illinois). Newly established health department; proposed staff of nine; population 35,000. Salary

$6,000–$7,000 depending on qualifications, plus travel allowance. Write Roland R. Cross, M.D., Director, Illinois Dept. of Public Health, Springfield, Ill.

Wanted: **Qualified Public Health Nurse** for staff position in generalized program in Cortland, N. Y. Opportunity for rural and urban experience in County Health Dept. Transportation provided. Salary $2,178–$2,420. Write Cortland County Health Dept., Cortland, N. Y.

Wanted: **Laboratory Technician,** female. For 130 bed Tuberculosis Sanatorium in the Middle West. Experience in taking x-rays of the chest desirable but not essential to qualify for the position. Eight hour duty; Saturday afternoons and Sundays off. No night work. Salary $150 per month with full maintenance. Give age, race, experience, and reference when applying. Write **Box P,** Employment Service, A.P.H.A.

Wanted: **Industrial Hygienists.** Positions open for personnel with either engineering, chemical, or related scientific training, in state industrial hygiene division. All positions covered by state merit system. Monthly salaries $280–$400 depending on qualifications. Write Division of Industrial Hygiene, Georgia State Health Dept., Atlanta 3, Ga.

Wanted: **Two public health staff nurses** for full-time health unit, generalized program. Beginning salary $220. Experience required. Also, one public health nurse supervisor. Beginning salary $250. Degree desirable. Write Director J. T. Duncan, M.D., Box 110, Visalia, Calif.

Wanted: **Virologist,** for full-time research. Must have thorough experience in laboratory techniques of virus disease research. Salary $3,500–$6,000, depending on training and experience. Write **Box G,** Employment Service, A.P.H.A.

Wanted: **Health officer or pediatrician** with administrative and public health experience, to serve as assistant health officer in charge of Maternal and Child Health of King County, Washington. Salary $6,000 plus travel. Write Dr. J. D. Fouts, Health Officer, King County Dept. of Public Health, Seattle 4, Wash.

Wanted: **Physician for Director of Division of Venereal Disease Control** in large county health department. Several large clinics in operation. Must be able to direct and supervise a complete V.D. Control Program. Specialized training and experience in this work required. One with public health training and experience preferred. Position under Civil Service. Starting salary $6,900 plus travel allowance. Maximum salary $7,800. Write, giving full particulars and earliest date available, Director, Wayne County Health Dept., Henry Ruff Road, Eloise, Mich.

Wanted: **Associate Secretary** for Health Division, Council of Social Agencies of midwestern city; duties are those involved in a community program of coördination and planning, with particular reference to the public health field. Graduation from an accredited college or university and experience, including some executive experience in the health field essential. Salary $3,400–$5,400. Write **Box E,** Employment Service, A.P.H.A.

Wanted: Industrial Hygiene Chemist Class III. Salary $260–$310 per mo. Must be a graduate of an accredited college with a major in chemistry. Three years' experience in professional analytical chemistry and research required. Write Industrial Hygiene Unit, Wisconson State Board of Health, State Office Bldg., Madison 2, Wisc.

Wanted: Sanitarian and dairy inspector. Must be trained and experienced in all phases of inspection work. Department furnishes Pickup and pays all expenses of operation and repair. Write State Dept. of Agriculture, Room 310, Capitol Bldg., Cheyenne, Wyo.

Wanted: Bacteriologist with equivalent rating of junior grade, A.B. or B.S. degree, and at least one year experience in a public health laboratory, to work in County Laboratory, acting in capacity of a State Branch Laboratory. Permanent position, salary $2,180 per annum. Write Arlington County Health Department, P. O. Box 151, Arlington, Va.

Wanted: Assistant Bacteriologist-Serologist for health department laboratory. College degree. Salary $2,600. Write Charles A. Neafie, M.D., Director of Public Health, Pontiac 15, Mich.

Wanted: Supervisor for Public Health Nurses. Minimum requirement, certificate in public health nursing. Salary $3,200. Transportation provided. Write Charles A. Neafie, M.D., Director of Public Health, Pontiac 15, Mich.

Wanted: Director of city health department in large western city, state capital. Position under Merit System. One year graduate study in public health required. Salary $6,000–$7,200. Write **Box A,** Employment Service, A.P.H.A.

Wanted: Three public health nurses for staff positions in City Bureau of

Health, serving population of 45,000: (1) One white nurse with course in public health and experience, $190 per month. (2) One white nurse with course and no experience, $156.90 per month, or without course or experience $143.75. (3) One Negro nurse without course or experience, $143.75. Write S. D. Sturkie, M.D., Director of Public Welfare, City Hall Annex, Lynchburg, Va.

Wanted: Public Health Nurse with degree and public health experience for administrative position in newly organized cancer program. Salary $3,100. Furnish own car, gas and oil furnished. Also public health nurse with degree and public health experience for educational program. Must own car. Salary $3,100. Write **Box B,** Employment Service, A.P.H.A.

POSITIONS WANTED

Bacteriologist - Immunologist desires permanent position in medical or public health bacteriology and immunology. Doctorate from Eastern university. Several years' research and teaching experience. Veteran. Write Box **L-495,** Employment Service, A.P.H.A.

Bacteriologist and Parasitologist with 4 years' experience as sanitarian and over 3 years' experience in Army medical and sanitary bacteriology, recently 1st Lt., Sanitary Corps, AUS, seeks position in public health laboratory or research in industrial bacteriology. Write **E-490,** Employment Service, A.P.H.A.

Bacteriologist - Serologist, thoroughly experienced and capable; teaching, public health and hospital diagnostic routine; excellent references. **L-475,** Employment Service, A.P.H.A.

R.N., B.S. Wide background of experience in all fields of promotion and health education with official and voluntary agencies. Ability to organize long-range programs and work effectively with staffs and board members. Seeks position in New York City or within commuting distance. Write Box **N-386,** Employment Service, A.P.H.A.

Parasitologist, M.S., female, five years' experience in research and routine laboratory work also in allied biological fields. Write **L-500,** Employment Service, A.P.H.A.

Health Educator experienced in community organization work plus university teaching and adult education. Wishes position in community organization work or with special community project in health education. Write Box **H-520,** Employment Service, A.P.H.A.

Pathologist, Board Diplomate, competent and experienced in pathologic anatomy, clinical pathology, bacteriology and tropical medicine; years of public health experience as laboratory director and research associate: consultant, professor and executive; numerous publications, excellent references. Age 40. **L-472,** Employment Service, A.P.H.A.

Executive with long service in public health education and public relations in a large state health department available after January 1. Experienced in editorial work and in planning and executing special programs such as accident prevention, diphtheria immunization, convention planning. Part- or full-time. Write **Box A-525,** Employment Service, A.P.H.A.

Advertisement

Opportunities Available

WANTED—(a) Physician trained and experienced in infant care to direct maternal and child health services, municipal department of health; newly-created position unimpeded by politics; woman eligible; $5,000-$6,000 with provision for salary advancements to $9,900; large city in Middle West. (b) Physician to take over the superintendency of general county hospital and, also, to serve as county physician; hospital cares primarily for indigent patients; winter resort town of 55,000; $700; Southwest. (c) Ophthalmologist, Diplomate of American Board, to become associated with national health agency; duties consist of participating in program which includes activities related to industrial and school hygiene as well as general problems of eye health; headquarters in New York. (d) Young physician to head school health program; staff of six nurses; all-year round winter resort town in Southern California. (e) Medical coördinator for state crippled childrens division; experience in pediatrics, public health or orthopaedics required; $5,500-$8,000, depending upon qualifications; Middle

Opportunities Available (cont.)

West. (f) Public health physician for field position in Latin American Republic. (g) Two men and, also, young woman physician for student health appointments, university expecting enrollment of 18,000 (13,000 men); new student health building; professional staff comprised of seven internists, three psychiatrists, allergist with other specialties represented on part-time basis; well equipped infirmary of 60 beds; complete x-ray and laboratory facilities; possibility of teaching appointment if physician wishes it; salary range $4,500 to $5,250 with possibility of early increase. **PH11-1** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—Dentist, preferably qualified in public health dentistry, for directorship of dental health in southern state; immediately. **PH11-2** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health educator to work in conjunction with public health and medical department of large industrial company; duties consist of preparation and dissemination of information relating to public health; West. (b) Health educator; generalized program; New England; $4,000. (c) Health educator for newly-created position of coördinator for division of health, metropolitan and county organization; must be qualified to direct community-wide health educational program; should be skilled in preparation of education units, community organization; radio script writing, public health journalism, public speaking. **PH11-3** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Sanitarian; important industrial project; South. (b) Assistant sanitation director; national organizaiton; duties include conducting educational program; practical experience as sanitarian in food industry desirable. (c) Industrial hygienist; research position with large industrial company; duties consist of investigating chemical toxic hazards to which workers are exposed and the possible toxic hazards of products which are sold to the public; training and experience in industrial hygiene required; considerable training in chemistry, especially organic chemistry, and physiology desirable. **PH11-4** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Executive secretary; district nurses' association; present membership 600; most desirable location; South. (b) Public health instructor, large teaching hospital; preferably someone willing to assume responsibility for student program in outpatient department; faculty rank; $200, complete maintenance. (c) Public health nurse; voluntary agency; town of 35,000 located on outskirts of university center of the East; opportunity for continuing studies. (d) Public health nurse for school nursing; small town located in Chicago area. (e) Associate for nursing division, national health agency; administrative ability and experience required; headquarters in New York City. (f) Supervisor of generalized public health program inaugurated three years ago; staff of ten nurses engaged in active program; preferably someone qualified to direct expanding program; South. **PH11-5** Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

Advertisement

Opportunities Wanted

Dentist now on terminal leave; duties during past four years have been chiefly in general practice with special emphasis on prosthetics and oral surgery; is particularly interested in the field of nutrition as related to oral health and peridontia; special courses in nutrition and oral pathology; B.A. and D.D.S. degrees, eastern schools; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; B.S., M.S. and Ph.D. degrees; several years, instructor in biology, bacteriology and health; state university; three years, public health educator, city and county health department; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health physician; Master's degree in Public Health, Johns Hopkins; twelve years' experience as professor of preventive medicine, public health and industrial medicine, university medical school; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health nursing administrator; A.B. and M.A. degrees; professionally trained in university schools; eight years' interesting experience as public health supervisor; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitary chemist; B.S., M.S., and Ph.D. degrees; has done considerable research and field work, particularly with wastes from synthetic rubber plants, food dehydration plants, etc.; several years' industrial experience which included research on explosives and alkalies; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young man expecting early discharge is available for position in public health or bacteriology; B.A. (major in biological sciences and education); M.S. (Biology), M.P.H.; five years' teaching experience, three years, head of department of hygiene and sanitation where he also directed clinical laboratory department, several years with the public health service as sanitarian; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

NEWS FROM THE FIELD

MEDICAL MEMORIAL FUND

A new foundation has been organized for medical research covering all diseases and all medical problems. Known as the Medical Memorial Fund, its aim is to see that all problems which are most in need of investigation receive more adequate attention than at present. Because the greatest need at this time is for research on the cardiovascular-renal diseases and on aging, these fields are particularly emphasized in the Fund's research program.

Research grants will be made by a Scientific Committee aided by Subcommittees on Heart and Arteries, Hypertension, Nephritis, Arthritis and Rheumatism, Gerontology, Cancer, and Senile Psychiatry, as well as 15 special consultants. About 50 of the foremost American medical scientists will cooperate in making decisions about the disbursal of grants.

Officers of the Fund are:

Chairman—Harlow Shapley, Ph.D., Harvard College Observatory
President—Henry S. Simms, Ph.D., College of Physicians and Surgeons
Vice Presidents—Russell L. Cecil, M.D., Cornell Medical College; J. Murray Steele, M.D., Goldwater Memorial Hospital
Secretary—Marvin R. Thompson, Ph.D., Connecticut
Treasurer—Guy Emerson, Bankers Trust Company
Dr. Steele also serves as *Medical Director* of the Fund.

In addition to the President, Vice President, Medical Director, and Secretary, the Scientific Committee includes A. J. Carlson, Ph.D., Harry Goldblatt, M.D., Theodore G. Klumpp, M.D., Chauncey D. Leake, Ph.D., William deB. MacNider, M.D., D. D. Van Slyke, Ph.D., A. Ashley Weech, M.D., and George H. Whipple, M.D.

In announcing the new Fund, it is indicated that at least $10,000,000 could profitably be added annually to the support of medical research. Heretofore, about $5,000,000 has annually been made available by such endowed foundations as Commonwealth, Macy, Markle, Rockefeller, and others. Of this amount, $94,000 was for research on diseases of the heart and arteries. This represents 17 cents per death; diseases of the kidneys received only 38 cents per death. The problem of aging has been almost entirely neglected; arthritis and rheumatism have received far too little attention.

The Fund will make its chief drive for gifts from the general public, and will accept any amount from $5 to $5,000. A donor may make his gift as a memorial to someone who has died. In such case, a dignified memorial certificate is inscribed with the name of the one whose memory is honored as well as the name of the donor. Gifts should be sent to: Medical Memorial Fund, 650 West 165th Street, New York 32.

Physicians are informed that they can aid the Fund either with personal gifts or as agents for the Fund in requesting gifts from their friends and patients.

NEW TRICHLOROETHYLENE LIMITS

Trichloroethylene in sufficiently high quantities has narcotic properties similar to chloroform. Prolonged or frequently repeated exposure to concentrations higher than 200 p.p.m. may injure the central nervous system and possibly the liver.

According to the latest standard, "Allowable Concentration of Trichloroethylene" (approved August 6, 1946) of the American Standards Association,

200 p.p.m. of air by volume is the maximum allowable concentration of trichloroethylene. This corresponds to 1.07 mg. per liter at 25° C. and 760 mm. Hg for exposures not exceeding a total of eight hours daily. The above standard is available as Z37.19–1946 from the American Standards Association, 70 East 45th Street, New York 17, N. Y. for 30 cents.

FOR BETTER HOUSING

According to a recent news release of the National Housing Agency, Office of Housing Expediter, the U. S. Public Health Service will assign engineers to the National Housing Agency to serve as consultants on public health and environmental sanitation in connection with the "Veterans Emergency Housing Program."

A supervising sanitary engineering consultant will be assigned to the N.H.A. headquarters in Washington and a qualified engineer is to be provided for each of the eight regional N.H.A. offices. Training by the Public Services Division of N.H.A. will be given to each staff consultant prior to his assignment.

When assigned to the regional offices the engineers will work under the direction of the regional expediters and in collaboration with the Land and Public Health Services Specitlist of the region.

NEW SANITARY LABORATORY AT JOHNS HOPKINS

The opening of a new Sanitary Laboratory in the Department of Sanitary Engineering is announced by Dr. Abel Wolman, Professor of Sanitary Engineering, The Johns Hopkins University. These laboratories are designed for graduate study in research in sanitary engineering and water resources problems, particularly with those relating to the chemistry and biology of water supplies, sewage disposal systems, polluted waters, industrial wastes, and the ecology of estuaries. Courses offered in the laboratories will complement those offered by Professor Wolman and Associate Professor Geyer by furnishing formal and research training in the bacteriological, biological, and chemical techniques basic to sanitary engineering. A unique feature of the work is the extension of facilities for mutual study of water resources problems by those interested in conservation, waterways improvement, shellfish, and others involved in the control of public waters.

The new laboratories will be in charge of Dr. Charles E. Renn, lately Associate Biologist of the Massachusetts Department of Public Health, Division of Sanitary Engineering, and Lecturer in Sanitary Biology, Harvard University.

MONTANA MAKES A PLAN

In April, 1946, Dr. B. K. Kilbourne became Executive Officer of the Montana State Board of Health. Shortly thereafter there was published by the State Board of Health "Public Health Services in Montana: Organization and Functions of County or District Health Units." In addition to a discussion of organization and functions, this bulletin reproduces the map of the suggested districting into health units of Montana as proposed in the volume *Local Health Units for the Nation*. It also includes Montana's 1945 enabling legislation for county and district health units and has a section each on Coöperation with other Agencies and on How is a County or District Health Unit Obtained?

LOCAL HEALTH UNITS FOR THE NATION IN THIRD PRINTING

The Commonwealth Fund reports that the second printing of *Local Health Units for the Nation* is so nearly exhausted that a third printing of 2,000 copies has been ordered. Up to the

end of September, 1946, nearly 3,000 copies had been distributed.

The volume is available at $1.25 through the Association's Book Service.

HEALTH EDUCATION FELLOWSHIPS

The U. S. Public Health Service has just announced that sixteen fellowships in health education have been allocated from funds made available to the Public Health Service from the National Foundation for Infantile Paralysis. In making this announcement Surgeon General Thomas Parran of the U. S. Public Health Service said that nine states and Puerto Rico were represented by the individuals.

In addition to nine months of academic study, each student will have three months of field training in a health department under supervision of a public health educator. Upon satisfactory completion of the year's work, a Master's degree in Public Health Education will be granted.

The awards made this year bring to a total of 57 those who have received this distinction since they were made available in 1944. The winners of this year's award were selected from a total of 200 candidates who applied for consideration to the Training Committee on Public Health Education of the U. S. Public Health Service.

CUTTER LECTURE

The Harvard School of Public Health announces that Sir Lionel Whitby, Regius Professor of Physic in the University of Cambridge, England, will deliver the Cutter Lecture on Preventive Medicine on November 6, 1946, at 5 p.m. in Amphitheatre D of the Harvard Medical School. Sir Lionel Whitby has chosen as his subject, "The Hematological Effects of Irradiation." The Cutter Lectures on Preventive Medicine have been held since 1912, according to the terms of the will of Dr. John Clarence Cutter, of the class of 1877, which directed that they should be "free to the medical profession and to the press." In addition, medical and public health students and others interested are cordially invited to attend.

MENTAL HYGIENE PROGRAM IN CALIFORNIA

The California State Board of Health will establish a mental hygiene program in the department and will organize demonstrations in preventive mental hygiene service in local departments. A psychiatric consultant will be added to the Division of Preventive Medicine to develop the program. Through in-service training demonstrations and lay and professional education, it will attempt to make mental health and psychiatric principles a part of public health and medicine. The new project is made possible by a two year grant from the Commonwealth Fund of New York with the possibility that the period may be extended.

INTERDEPARTMENTAL COMMITTEE TO COÖRDINATE MEDICAL TRAINING FILM PRODUCTION

An announcement has been made by the U. S. Public Health Service, the Veterans Administration and the War and Navy Departments that an Interdepartmental Committee for the Coordination of Medical Training Film Production has been established. The committee aims to develop production facilities and programs in such a manner as to eliminate unnecessary duplication of effort. All visual aids to be produced are classified under a few headings, each representing a general field of knowledge pertinent to medicine and public health. Certain agencies possess facilities and subject material suitable for each field of knowledge and the appropriate agency is designated by the committee in each instance to produce the aid required.

It is stated to be the aim of the committee to make available in the future for loan to suitable groups motion pictures or other visual aids as far as possible within the legal limits imposed on each visual aid produced. A meeting of the interdepartmental group was held in Washington September 12.

GORGAS MEDAL AWARDED TO BRIGADIER GENERAL KELSER

The Gorgas Medal, sponsored by Wyeth, Inc., of Philadelphia, and awarded annually by the Association of Military Surgeons of the United States for outstanding work in preventive medicine, will go this year to Brigadier General Raymond A. Kelser. General Kelser, who served as Director of the Veterinary Division of the Surgeon General's Office during World War II, is being honored for his work in eradicating rinderpest, a disease of cattle, in the Philippine Islands, making it possible for Filipinos to have their own domestic milk supply.

General Kelser is now Dean of the School of Veterinary Medicine at the University of Pennsylvania in Philadelphia. He is Chairman of the Standard Methods Committee on Biology of the Laboratory Animal, of the Laboratory Section of the A.P.H.A.

NURSE RECRUITMENT DRIVE

National and local advertising support valued at several hundred thousand dollars has been donated during the past four months in behalf of a special campaign designed to alleviate the nation's critical nurse shortage, it was announced recently by the Advertising Council, New York.

The campaign, sponsored by the Council in coöperation with the Office of War Mobilization and Reconversion, and by nursing and hospital groups as well as Blue Cross Plans, has been aimed at filling the thousands of existing vacancies in schools of nursing throughout the country in the belief that increasing the enrollment of student nurses will not only provide urgently needed help for many hospitals at this time but may also help in guaranteeing sufficient trained nurses in the period ahead.

The Council states that more than 100 leading radio programs on the four major networks carried special recruiting messages.

At the present time, nearly all of the 6,511 United States hospitals (not including Army, Navy, and Veterans' Administration hospitals) have patient waiting lists. In New York City alone, 2,000 beds were closed recently in municipal and private hospitals due to a lack of sufficient nursing personnel. As a result of the passing of a bill committing government expenditures of $75,000,000 a year for a period of 5 years, plans for building new hospitals and health centers are now under way. Thousands of nurses will be needed to staff these new hospitals.

INSTITUTE FOR RESEARCH IN TROPICAL MEDICINE

A gift of $250,000 for a new Institute for Research in Tropical Medicine to be established in Liberia was announced by Harvey S. Firestone, Jr., President of The Firestone Tire and Rubber Company at a banquet given by the Consul General of Liberia, Frederick A. Price, in New York, on September 19, commemorating the one hundredth anniversary of the independence of the Republic of Liberia. Guests included State Department and other government officials, foreign diplomats, and medical, educational and religious leaders.

The American Foundation for Tropical Medicine favorably received a proposal that it operate the new institute which will be erected and equipped with the Firestone gift. University members of the Foundation which will carry out

the work of the institute include: Harvard, Johns Hopkins, Stanford, Tulane, California, Southern California, Duke, Chicago, Michigan, the Long Island College of Medicine, and the New York University College of Medicine.

NEW YORK ACADEMY OF MEDICINE LECTURES TO THE LAITY

The New York Academy of Medicine has announced the Twelfth Series of Lectures to the Laity for 1946–1947 with the theme of "Medicine in the Postwar World." The program on October 31 included an address by Major-General Norman T. Kirk on "The Role of the Medical Man in War." Future sessions which have been scheduled are:

November 14—The Atom in Medicine—Arthur K. Solomon, Ph.D.
December 12—Are Parents Necessary?—Rene A. Spitz, M.D.
January 9—What the Wars' Experiences Have Taught Us in Psychiatry—Nolan D. C. Lewis, M.D.
January 23—American Pioneering in Psychiatry—Howard W. Haggard, M.D.
February 13—Anti-Infectious Agents of Natural Origin—Rene J. Dubos, Ph.D.

NEUROPSYCHIATRIC INSTITUTE AND WALTER HAYNES FOUNDATION CREATED

A Neuropsychiatric Institute has been created at the Medical College of Alabama in Birmingham to be located in the school's teaching hospital, the Jefferson and Hillman, which will house on one floor the newly formed Department of Neurosurgery, Neurology and Psychiatry and all patients of the Institute. Diagnostic, therapeutic, research, and teaching services of the Institute will be available to the profession at large. This Neuropsychiatric Institute has been made possible by the Walter Haynes Foundation, which will subsidize study and research in addition to the activities of the Institute. The Walter Haynes Foundation, for which charter papers were filed July 8, was created by Dr. Walter Haynes, Professor and Chief of the newly created Department of Neurosurgery, Neurology and Psychiatry and Director of the Neuropsychiatric Institute. It aims to promote research, education, and training in the fields of neurosurgery and neurology as well as to subsidize the Institute.

PROFESSIONAL COMMITTEE ON CHEMISTRY AND TOXICOLOGY FORMED

The creation of a new professional Committee on Chemistry and Toxicology, headed by Henry F. Smyth, Jr., Ph.D., Senior Fellow of the Mellon Institute (Pittsburgh), has been announced by the Industrial Hygiene Foundation. Members of the new committee are:

Francis R. Holden, Ph.D., Pittsburgh, Committee Secretary
E. C. Barnes, East Pittsburgh
W. R. Bradley, New York
Warren A. Cook, Chicago
D. D. Irish, Ph.D., Midland, Mich.
F. A. Patty, Detroit
D. A. Russell, Youngstown
H. H. Schrenk, Ph.D., Pittsburgh
W. P. Yant, Sc.D., Pittsburgh

NEW YORK ACADEMY OF MEDICINE MEETING

The Committee on Public Health Relations of the New York Academy of Medicine is sponsoring a joint meeting of the New York Society for Medical History and the Section of Historical and Cultural Medicine of the New York Academy of Medicine to be held on November 8 at 8:30 p.m. in the Academy building at 2 East 103 Street.

James Alexander Miller, M.D., Chairman of the Committee on Public Health Relations will preside. A paper on "Eighty Years of Public Health in New York City" will be presented by Israel Weinstein, M.D., the Commissioner of Health, City of New York, and the discussion period will be led by Harry S. Mustard, M.D.

ORGANIZATION FOR MULTIPLE SCLEROSIS FORMED

The Association for the Advancement of Research in Multiple Sclerosis has been organized by a group of sponsors including Mrs. Wendell Willkie, William J. Norton, Secretary of the Children's Fund of Michigan, Senator Brien McMahon of Connecticut, and eight other business and professional men. Its purpose is to combat multiple sclerosis, a mysterious malady that affects the nervous system with crippling effects. Neither the cause nor the cure of this disease is known.

A membership drive is the first objective of the Association. By enrolling as many sclerosis sufferers as possible it hopes to determine the prevalence of the disease. At present there are no statistics giving the overall picture, although it is thought possible that "sclerosis victims may outnumber infantile paralysis sufferers."

The association will further coördinate research efforts, serve as a clearing house for information, educate the public on the problem, and provide funds to stimulate and support research.

The budget of the Association has been underwritten for two years by its sponsors. Its headquarters are at the New York Academy of Medicine, 2 East 103rd Street, New York. Chairman of the Board of Directors is Carl W. Owen of the law firm of Owen, Willkie, Otis, Farr and Gallagher. Honorary Chairman is Dr. Tracy Jackson Putnam, Director of Neurology and Neurological Surgery of the Neurological Institute in New York. Among its Medical Advisory Board of 20 are: Dr. Leo Alexander of Massachusetts State Hospital, Dr. Roger I. Lee, retiring President of the American Medical Association, Dr. Thomas M. Rivers, Director of the Hospital of the Rockefeller Institute for Medical Research, Dr. Ernest L. Stebbins, Dean of the School of Hygiene of Johns Hopkins University, and Dr. Henry Woltman of the Mayo Clinic. The Board will be enlarged from time to time to include persons working directly in the field of sclerosis research.

ENVIRONMENTAL SANITATION PERSONNEL REQUIREMENTS

Public health engineers across the country are receiving questionnaires from J. Lloyd Barron, C.E., chairman of the Committee on Engineering Administrative Practice of the Conference of Municipal Public Health Engineers. He is seeking their proposals on the personnel, functions and costs of an ideal environmental sanitation division for various population levels. The purpose of the project is to obtain information needed to clarify organizational requirements in this field of public health.

DONATION TO ASSOCIATION LIBRARY

Through the generosity of Millard Knowlton, M.D., the Association is the recipient of several volumes of public health works that were formerly part of Dr. Knowlton's library. Included among the books are copies of the *American Journal of Public Health* from May, 1918, to June, 1919. Of particular interest are Volumes I and II of the *Journal of Health* for the years 1830 and 1831 published in Philadelphia. Volume I has a frontispiece of an engraving of Benjamin Rush, M.D., autographed by Dr. Rush.

APPOINTMENTS IN U. S. PUBLIC HEALTH SERVICE

Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, has announced several recent appointments of physicians. Among these are the designation of Dr. James A. Crabtree, Deputy Surgeon General, effective September 1; Dr. C. L. Williams, Chief, Bureau of State Services, and Dr. L. R. Thompson, Associate Chief, also effec-

tive September 1; Dr. H. E. Hilleboe, Assistant Chief, Bureau of State Services, effective September 11, and Dr. W. Palmer Dearing, Chief, Division of Commissioned Officers, effective September 6.

Two newly created divisions have been announced, one the Research Grants Division, whose Chief is Dr. Cassius J. Van Slyke, whose appointment was effective August 12. The other is the Division of Hospital Facilities, of which the Chief is Dr. Vane M. Hoge, whose appointment was announced August 16.

DR. TURNER JOINS N.F.I.P. STAFF

The appointment of Clair E. Turner, Dr.P.H., formerly of the Massachusetts Institute of Technology faculty, Cambridge, Mass., as Assistant to President Basil O'Connor of the National Foundation for Infantile Paralysis, has been announced. Dr. Turner is well known in the field of health education, having recently served as Visiting Professor of Health Education at the University of California School of Public Health, Berkeley, as Chief Health Education Officer for the Institute of Inter-American Affairs, and as Consultant for the Illinois and Kansas State Departments of Health.

OKLAHOMA STATE FAIR EXHIBITS MODEL LOCAL HEALTH UNIT

A scale model of a local health department set-up was the key exhibit of the State Health Department at the Oklahoma State Fair in September. The work of a well planned city, county, or city-county health unit was divided into nine categories: maternal and child health, nursing, nutrition, sanitary engineering, laboratory, communicable disease, health education, preventive dentistry, and vital statistics. The display was prepared in answer to a number of requests from municipal organizations that are interested in building such units under the provisions of the federal Hospital Construction Act.

UNIVERSITY OF MINNESOTA EXPANDS SCHOOL OF PUBLIC HEALTH STAFF

Gaylord W. Anderson, M.D., Dr.P.H., Mayo Professor and Director of the School of Public Health, University of Minnesota, Minneapolis, has announced the following new appointments and promotions in the School of Public Health:

The appointment of Margaret Taylor, R.N., as Associate Professor of Public Health and Director of the Course in Public Health Nursing. Miss Taylor will succeed Ruth Freeman who has joined the staff of the American Red Cross in Washington. She will begin her appointment effective January 1 from her present position as Chief Consultant Nurse in the Tuberculosis Program of the U. S. Public Health Service, Washington. Formerly Miss Taylor was Director of the course in public health at the University of Buffalo.

The appointment of James Hamilton as Professor of Hospital Administration on a part-time basis. Mr. Hamilton has been superintendent of hospitals in Cleveland and New Haven and is a past President of the American Hospital Association and of the American College of Hospital Administrators. He will continue his work in hospital consultation.

The appointment of James Stephan as Associate Professor in Hospital Administration. Mr. Stephan is a graduate of the course in hospital administration at the University of Chicago and has been connected with hospitals in Cleveland and New Haven. He is now Superintendent of the Aultman Hospital in Canton, Ohio. His appointment is effective January 1.

The promotion of Theodore A. Olson from Assistant Professor to Associate. Mr. Olson has been with the School of

Public Health for Several years in connection with courses in sanitary biology and public health entomology.

YEAR'S TOTAL OF $700,000 FROM LIFE INSURANCE MEDICAL RESEARCH FUND

Additional grants in September by the Life Insurance Medical Research Fund brings its allocation of research funds during the first year of its existence to almost $700,000. The September grants included eight postgraduate and three junior fellowships and three grants-in-aid to universities. The fellowship awards bring the total number to 20, representing $55,800. The 20 fellows come from 11 states and 2 Canadian provinces, and will engage in medical research at 17 different institutions. Grants-in-aid for research amount to $633,600 for a total of 55 projects.

The Fund is supported by 149 insurance companies in the United States and Canada. All its sponsored research is devoted at present to cardiovascular diseases, the most prevalent single cause of death. In reporting the recent awards, Dr. Francis Dieuaide, Scientific Director, announced that applications for 1947 research fellowships will close on January 1, 1947, for grants-in-aid to be made on January 31.

For additional information about the Fund, see 1946 *Journal*, pages 581 and 952.

HOUSTON IMMUNIZATION PROGRAM

The City of Houston, Texas, Board of Education passed a school law effective September 1, 1946, which reads as follows:

> Effective as of the beginning of the next scholastic year, September 1, 1946, as a prerequisite to the entrance, for the first time, into the schools within Houston Independent School District by any child or children under the age of ten (10) years, such child or children shall have received the current approved immunization for diphtheria, or a negative Schick test within twelve months before entering school, and proper evidence thereof shall be furnished by either such child, children, or their parent or parents or guardians, as the case may be.

This law was passed at the request of the local Board of Health. During the month of August, 155,000 stuffers went to citizens throughout the metropolitan area in their light bills warning them that the diphtheria school law would go into effect at the opening of school this year. As a result more than 10,000 very young school children were immunized and thousands of preschool children.

MITE ON MICE CAUSES MYSTERIOUS FEVER

A hitherto unknown type of spotted fever, affecting nearly 100 persons in Queens Borough of New York City during the past summer, was identified recently as a new disease spread by the bite of a mite that lives on the bodies of mice. The disease is characterized by fever and rash, with recovery of all cases within 2 weeks. It has been named "rickettsial pox." The discovery was made in the Washington laboratories of the National Institute of Health by Drs. Charles Armstrong and Robert J. Huebner of the U. S. Public Health Service. Dr. Armstrong is Chief of the Division of Infectious Diseases of the Institute. The assistance of the Service in diagnosing the disease was requested by the New York City Health Commissioner, Dr. Israel Weinstein.

The mite which spreads the disease, *Allodermanyssus sanguineus*, was found in storerooms and around incinerators of apartment houses in which the disease occurred. It lives on the bodies of mice and spreads the disease through its bite. The new disease follows the pattern of the other seven known rickettsias, depending upon the bite of an insect.

DR. E. S. ROGERS APPOINTED DEAN AT UNIVERSITY OF CALIFORNIA

According to a recent announcement, Edward S. Rogers, M.D., M.P.H., Assistant Commissioner for Medical Administration in the New York State Department of Health, Albany, has resigned to accept appointment as Professor of Public Health and Medical Administration and Dean of the School of Public Health of the University of California, Berkeley. Dr. Rogers has served as a member of the department staff for 11 years and has been Assistant Commissioner for 5 years. He is a graduate in medicine of the Harvard Medical School and in public health from the Johns Hopkins School of Hygiene and Public Health. His duties in California will begin in January, 1947, and in the interval he will study the routines in operation in other schools of public health. Dr. Rogers recently has served as Acting Chairman of the Subcommittee on Medical Care of the Committee on Administrative Practice, A.P.H.A., during the absence in Europe of the Chairman, Dr. J. W. Mountin.

PERSONALS

Central States

HERBERT M. BOSCH, M.P.H.,* has been appointed Director of the Division of Sanitation of the Minnesota State Department of Health, effective September 16, succeeding H. A. WHITTAKER* who has resigned to join the staff of the University of Minnesota.

ROBERT E. MATTISON, M.D., formerly of Minneapolis, has been named Assistant Director of the Division of Maternal and Child Health, Montana State Department of Public Health in Helena.

ORIANNA MCDANIEL, M.D.,† of Minneapolis, retired July 1, ending 50 years of service to the Minnesota Department of Health. She joined the board first as bacteriologist at the then newly established laboratory. After subsequent promotions, she was made Director of the Division of Preventable Disease in 1921, a position she has held since that time.

HERBERT MOORE† has been discharged after three years of service in the Sanitary Corps of the Army and has returned to his sanitary engineering practice in Milwaukee.

ANDREW NADY, M.D., of Calumet City, Ill., has accepted an appointment in the Department of Medicine and Surgery, Veterans Administration and has assumed the duties of Chief of Tuberculosis Section, Veterans Administration Hospital, Tucson, Ariz. Dr. Nady had been Tuberculosis Control Physician, State of Illinois, since April 1, 1944, and served as Assistant Medical Director of the Tuberculosis Hospital at Oak Forest, Ill., from 1940 to 1944.

CHANGES IN HEALTH PERSONNEL IN INDIANA:

ROBERT C. ROGERS, M.D., has resigned as Health Officer of Bloomington.

MARTHA A. O'MALLEY, M.D., M.P.H.,* of Waukon, Ia., has been named Director of the Division of Hospital and Institutional Services of the Indiana State Board of Health.

RICHARD K. SCHMITT, M.D., has been named Health Officer of Columbus, succeeding the late Louie R. Crabtree, M.D.

Eastern States

JOSEPH H. BUNZEL† has resigned from the Pittsburgh, Pa. Housing Association to become Associate Professor of Sociology at Fisk University, Nashville, Tenn., where he will continue interest in public health, with particular reference to housing.

HOWARD REID CRAIG, M.D., has been

appointed Director of the New York Academy of Medicine, effective October 1, succeeding HERBERT B. WILCOX, M.D., who has resigned. Dr. Wilcox has been Director since 1939.

LYMAN C. DURYEA, M.D.,† has been appointed Medical Director of the Research Council on Problems of Alcohol. He has been most recently Medical Director of the Veterans Administration in the State of New York. Previously, Dr. Duryea served as the Director of the Division of Physically Handicapped of the New York City Department of Health. During World War II, he was Assistant Surgeon of the Second Service Command at Governor's Island, N. Y., serving with the rank of Colonel up to December 29, 1945.

WARFIELD GARSON, M.D., Assistant Surgeon of the Field Study Section of the Tuberculosis Control Division of the U. S. Public Health Service, has been appointed Associate Research Specialist in the Department of Microbiology at Rutgers University, New Brunswick, N. J. Dr. Garson will work with SELMAN A. WAKSMAN, PH.D., Professor of the department, and the work will be directed toward the isolation of antibiotics particularly active against the tubercle bacillus.

JOSEPH HIRSH† has been appointed Associate Director of the Research Council on Problems of Alcohol in charge of Education and Public Relations. Prior to coming to the Council, Mr. Hirsh had served first as Field Director of Public Relations, then as Director of Medical Administration of the Veterans Administration for the hospitals and clinics in the State of New York.

ALICE B. KLINE,† home economist, has been added to the Public Relations Department of the General Foods Corporation in New York, in line with the company's policy of interpreting and bringing to the public essential information on foods and food research. Miss Kline has been associated with the Connecticut Dairy and Food Council.

BERWYN F. MATTISON, M.D.,† resigned August 31 from the position of District State Health Officer in charge of the Kingston area, New York, to assume the duties of Commissioner of Health of the city of Yonkers.

HENRY N. PRATT, M.D.,† has been appointed Administrator of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, a new position created because of the expansion program of the hospital. Dr. Pratt has been instructor in pediatrics at Harvard Medical School, Boston, since his release from army service.

HOWARD A. RUSK, M.D.,† wartime Head of the Army Air Forces Convalescent Services Program, will be in charge of a new Department of Rehabilitation and Physical Medicine at the New York University School of Medicine. Dr. Rusk will continue as Associate Editor of *The New York Times* and Consultant in Medical Rehabilitation to the Medical Director of the Veterans Administration. The new department is an expansion of a Division of Physical Medicine set up last year under a grant of $250,000 from the Baruch Committee on Physical Medicine and will work closely with the City's Department of Hospitals in establishing and supervising rehabilitation programs in all city hospitals.

FRANCIS H. SLEEPER, M.D., of Boston, Assistant to the Commissioner of Mental Health in Massachusetts, has been appointed Superintendent of the Augusta State Hospital and Con-

* Fellow, A.P.H.A.
† Member, A.P.H.A.

sultant on Hospitals and Mental Health to the Maine Department of Institutional Service, effective September 1, succeeding FORREST C. TYSON, M.D., who has retired.

JOHN B. WILBUR, Sc.D., Acting Head of the Department of Civil and Sanitary Engineering, Massachusetts Institute of Technology, has been appointed Head of that Department. Dr. Wilbur was also Professor of Structural Engineering prior to this appointment.

Southern States

W. PALMER DEARING, M.D.,* has recently been appointed Chief of the Division of Commissioned Officers in the U. S. Public Health Service, with the rank of Medical Director. Dr. Dearing came to the Division of Commissioned Officers in May, 1946, from the Division of Public Health Methods where he had served as Deputy Chief. During the war, he served first as Assistant and later as Chief Medical Officer of the U. S. Office of Civilian Defense. He has also served as personnel officer for the Health Division of UNRRA.

HERMAN E. HILLEBOE, M.D., M.P.H.,* has recently been appointed to the newly created post of Assistant Chief, Bureau of State Services, U. S. Public Health Service. He will continue to discharge his regular duties as Chief of the Tuberculosis Control Division.

JOHN EDWARD OFFNER, M.D.,† has resigned as State Health Commissioner of West Virginia, effective September 1. He has been succeeded by NEWMAN HOUGHTON DYER, M.D., a practising physician of Bartley, W. Va. Dr. Dyer will soon complete his work for the degree of M.P.H. at the University of Michigan School of Public Health. He served as a member of the West Virginia Governor's Advisory Committee to the Legislative Interim Committee to study public health problems.

WILLARD H. WRIGHT, D.V.M., PH.D.,* Chief, Division of Zoology, National Institute of Health, U. S. Public Health Service has been awarded the Legion of Merit for his actions in leading a field party into the zone of military operation in Mindanao and discovering two new regions in which schistosomiasis is prevalent.

CHANGES IN HEALTH PERSONNEL IN VIRGINIA:

L. J. ROPER, M.D.,* was appointed State Health Commissioner on September 1, succeeding I. C. RIGGIN, M.D., resigned. Before his appointment to his new position Dr. Roper served as Director of Local Health Administration in the Virginia State Department of Health.

WILLIAM Y. GARRETT, M.D.,† of Eastville, has been named Health Officer of the Norfolk-Princess Anne Health District, succeeding JOHN M. JACKSON, M.D., Manassas.

THOMAS SCARLETT, M.D., formerly Health Officer of Augusta-Rockingham-Harrisonburg Health District, recently returned from medical service in the army, has been assigned as Health Officer of the Fairfax County Health Department, effective May 1.

WILLARD W. GRIGGS, M.D., has resigned as Health Officer of the Page-Warren-Shenandoah Health District, effective May 13.

GEORGE R. CARPENTER, M.D.,† recently returned from duty in Austria, has been appointed Director of the State Bureau of Cancer Control.

SAMUEL C. INGRAHAM, II, M.D., of Richmond, recently released from his duties with the Tuberculosis Division of the U. S. Public Health

* Fellow, A.P.H.A.
† Member, A.P.H.A.

Service, has been appointed Director of the Tuberculosis Outpatient Service and Crippled Children's Bureau.

THOMAS F. MCGOUGH, JR., M.D.,† of Pulaski, recently released from medical services with the army, has been appointed Health Officer of the Peninsula Health District.

HARRY E. JENKINS, M.D., recently released from service in the navy, has been appointed Health Officer of the Southside Health District of the Virginia Department of Health.

CHARLES G. SOUDER, M.D., D.P.H.,† previously with the Navy and latterly with the American Red Cross, has been appointed Health Officer of the Loudoun County Health District.

SAMUEL S. SHOUSE, M.D., formerly Health Officer of Page-Warren-Shenandoah Health District and recently released from service in the Navy, has been appointed Health Officer of the Charlotte County Health District.

Western States

J. C. GEIGER, M.D.,* Director of Public Health, City and County of San Francisco, Calif., recently was presented with an illuminated scroll from the staff of the Department of Health in recognition of his completion of 15 years as Director of Health and for his distinguished leadership in the department.

FRANCIS I. LIVINGSTON, D.D.S., M.S. P.H., resigned in September as Head of the Dental Hygiene Section, Washington State Department of Health, Seattle, to accept the position of Director of the Dental Division, Montana State Board of Health, Helena, as of October 1.

FRED LOE, M.D., has been appointed Secretary of the Nevada State Board of Health, effective September 1, succeeding EDWARD HAMER, M.D.,† deceased. Dr. Loe served with the U. S. Indian Service from 1914 to May, 1946.

FRANCIS L. MCPHAIL, M.D., of Great Falls, has been elected President of the Montana Public Health Association.

Canada

G. D. W. CAMERON, M.D., D.P.H.,* has been appointed Deputy Minister of Health in the Department of National Health and Welfare of Canada succeeding G. BROCK CHISHOLM, M.D.,† who has retired to serve as Executive Secretary of the Interim Commission of the World Health Organization. Since the fall of 1945, Dr. Cameron had been the Department's Director of Health Services and was previously Chief of the Department's Laboratory of Hygiene.

E. C. CRITTENDEN was presented with the Illuminating Engineering Society 1946 Gold Medal at their Convention in Quebec on September 19 for his work as "an effective worker and leader in its technical activities, especially those related to nomenclature, standards, units and measurement of Light."

Foreign

A. FERNOS-ISERN, M.D.,† who has served for the last 5 years as Commissioner of Health in the Insular Department of Health, Puerto Rico, has resigned to accept appointment as Resident Commissioner for Puerto Rico in Washington, D. C. ANGEL M. MARCHAND, M.D., M.P.H.,† is Acting Commissioner of Health for the present.

COL. ARTHUR R. HARRIS of the U. S. Army, became President of The Institute of Inter-American Affairs and the Inter-American Educational Foundation on August 6. He has

spent considerable time as Military Attache to the Latin American Republics and last served in Argentina from June, 1945, to March, 1946.

HENRY R. O'BRIEN, M.D.,* Senior Surgeon (R), U. S. Public Health Service, has completed a tour of duty with UNRRA in which he saw service in the Middle East, Australia, the Philippines, Malaya and Shanghai. He is now in Washington with the Office of International Health Relations, U.S.P.H.S., where he is especially concerned with educational schedules for foreign public health workers and physicians visiting the United States.

Deaths

JAROSLAV DRBOHLAV, M.D., D.P.H.,† former Rockefeller Fellow, known for his work on amebiasis, tularemia and malaria, died recently at the age of 53 years in Prague, Czechoslovakia. Dr. Drbohlav has served as Head of the Diagnostic Service of the Czechoslovak Health Institute and Vice-President of the American Institute of Prague and most recently as Assistant Professor of Bacteriology at the Charles University in Prague.

LOUIS MARTIN, M.D., Honorary Director of the Pasteur Institute, died in Paris, June 13.

WILLIAM C. WELLING,* Director of the Bureau of Vital Statistics of the Connecticut State Department of Health, died on August 19.

CONFERENCES AND DATES

American Academy of Allergy—Annual Convention. Hotel Pennsylvania, New York, N. Y. November 25–27.

American Public Health Association—74th Annual Meeting. Headquarters—Public Auditorium, Cleveland, O. November 12–14.

Meetings of related organizations, November 11:

American School Health Association

Association of Maternal and Child Health Directors

Association of Reserve Officers of the U. S. Public Health Service

Conference of Municipal Public Health Engineers

Conference of Professors of Preventive Medicine

Conference of State Directors of Health Education

Conference of State Sanitary Engineers

Conference of State and Provincial Public Health Laboratory Directors

Council of State Directors of Public Health Nursing

National Advisory Council of Cleveland Health Museum

National Committee of Health Council Executives

Public Health Cancer Association

American Public Welfare Association—Annual Round Table. Baltimore, Md. December 5–8.

American Water Works Association—

New Jersey Section—Chelsea Hotel, Atlantic City, N. J. November 7–9.

Virginia Section—John Marshall Hotel, Richmond, Va. November 14–15.

Wisconsin Section—Northland Hotel, Green Bay, Wis. November 15–17.

North Carolina Section—Hotel Carolina, Raleigh, N. C. November 18–20.

Cuban and Florida Sections—Joint Meeting. Havana, Cuba. November 22–24.

Industrial Hygiene Foundation of America, Inc. Pittsburgh, Ill. November 7.

National Dairy Council. Atlantic City, N. J. January 29–31, 1947.

National Society for Crippled Children and Adults. Chicago, Ill. December 9–11.

National Society for the Prevention of Blindness — Conference. Hotel Pennsylvania, New York, N. Y. November 25–27.